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EXAMINATION PAPERS

IN

ARITHMETIC

IN THREE PARTS

DESIGNED FOR THE USE OF

SECOND, THIRD & FOURTH CLASSES

IN THE PUBLIC SCHOOLS.

BY

John Alex. McNaughton and M. Harvey Mann

TEACHERS, WEST MIDDLESEX.

PUBLISHED BY

H. FRED. SHARP, BOOKSELLER, ST. MARYS.

London, Ont.

ADVERTISER PRINTING AND PUBLISHING CO.

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PREFACE.

The object of these "Examination Papers" is to aid in preparing pupils for the different "Promotion Examinations" in the Public Schools, and also for the Entrance Examination to the High Schools.

The authors are convinced that many of their over-worked fellow-teachers experience much difficulty in procuring problems suitable for their classes, and in order to lessen the arduous toil of the teachers this little work has been prepared.

School Inspector's Office,
Strathroy, Ont., Sept. 22nd, 1883.

I had the pleasure of examining the manuscript of Messrs. McNaughton and Mann's Arithmetic. The problems are practical and excellent, and will be of much value to the classes for which they are prepared. The book is well worthy of being in the hands of every teacher.

JOSEPH S. CARSON,
Inspector of Schools.

SECOND CLASSES.

EXERCISE I.

1. Add together 80975, 68587, 476879, 5864, 97018, 837, 69, 760942, 8.

2. Find the sum of all the numbers ending in 7, between 83 and 206.

3. John has $156, James has $89 more than John, Henry has $128 more than John and James together, how much money have they all?

4. A man bought a horse for $185, and another for $218; he sold the span so as to gain $49; how much did he get for them?

5. Find the sum of all the numbers between 89 and 102, inclusive.

6. A farmer had 11 stacks of hay, each weighing 9784 pounds; how many pounds of hay had he?

7. A can earn $29 in one month, B can earn $18 more than A in a month; how much can they together earn in 12 months?

8. A man bought 7 horses at $138 each, 8 cows at $37 each, and 9 sheep at $9 each; how much money did they cost him?

9. There are 11 addends all equal, one of them is 67958. Find their sum.

10. A boy lives 987 yards from the schoolhouse; how far will he walk in a week if he go home every day for dinner?

11. Find the sum of the 8 numbers that follow the number eighty thousand, eight hundred and ninety-three.

12. The first of four numbers is 8793, the second is greater than the first by 2019, the third is equal to the sum of the first and second, and the fourth is 287 more than the sum of the other three; find the sum of the four numbers.

EXERCISE II.

1. Subtract 3747632829 from 9176540347.

2. Find the last remainder in subtracting 786945 as often as you can from 5508624. How many times can you subtract?

3. George Gordon bought a farm for $4050. If he pay $675 each year, how many years will it take him to pay for it?

4. To what number must 876493 be added to give 1138972?

5. From the difference between 869 and 614837 take the difference between 976841 and 961932.

6. A drover receives $9680 on Monday, on Tuesday he pays out $2365, on Wednesday $1462, on Thursday $1274, on Friday $1687, and the remainder on Saturday. How much does he pay out on Saturday?

7. The larger of two numbers is 706932, their difference is 798 less than 1976. Find the smaller number.

8. A, B, and C run a race of 15840 feet. A beats B by 165 feet, B beats C by 139 feet. By how much does A beat C?

9. By what number must one million less six thousand and ninety-three be increased to give 3746918—94786?

10. A man has $2480; he pay A $645; he has left $1360 more than he owes B. How much does he owe B?

11. What number subtracted from twenty-three thousand, eight hundred and seventy-one will make the result equal to the difference between ten thousand, seven hundred and ninety-four and six thousand eight hundred and forty-seven?

12. What number added to 87643 will amount to 9478 less than 257312?

EXERCISE III.

1. Multiply 6780419376 by 7069408.

2. Find the cost of 78 bales of cotton, each bale containing 412 yards at 13 cents a yard.

3. The multiplier is 4976, the multiplicand is 389 times the multiplier. How much is 9 times the product?

4. The factors of a number are 47, 63, 98 and 365; find the number.

5. How many nails will be required to shoe 96 span of horses, if it take 8 nails for each shoe?

6. A book contains 683 pages, each page has 49 lines, each line on an average has 9 words, and each word seven letters. How many letters are there in the book?

7. Find the value of 68 farms, each containing 15 fields of eight acres each, at $59 per acre.

8. Multiply 487910863 by 385, and also by its factors 5, 7, and 11, and show that the answers agree.

9. If 42897 be multiplied by 89, and the product be multiplied by 607; what is eleven times the result?

10. Find the continued product of the numbers between 58 and 62 inclusive.

11. The multiplier and multiplicand are equal, the multiplicand is 76089; what is the product?

12. If 279 men can do a piece of work in 84 days how long will it take one man to do a work 17 times as great?

EXERCISE IV.

1. Divide 2769428931 by 879.

2. How often is 77 contained in 37704821? Use factors.

3. Eleven times the product of two numbers is 3674752004, one number is 487. Find the other.

4. What number multiplied by 5689 will give 1529981369865?

5. What number besides 50805 will exactly divide 35640164745?

6. The dividend is 495562849756, the quotient is 97613; what is the divisor?

7. There are 13 addends all equal, their sum is 7928011. Find one of them.

8. How many times can 4089 be subtracted from 1083585?

9. Divide 8347659213 by 119, using factors.

10. The product of three numbers is 3171264, the product of two of them is 5312. Find the third number.

11. 18534591 is how many times 387?

12. Divide 270831457913 by 132, using three factors.

EXERCISE V.

1. The quotient exceeds the divisor by 47, the remainder is 87 less than the divisor, the quotient is 4286. Find the dividend.

2. The sum of five numbers is thirty-three thousand, eight hundred and eighty-three; the first number is 4183, the second 2796, the third 8095, the fourth seven thousand, eight hundred and thirty-four. Find the fifth number.

3. Remainder 24910, divisor 70602, quotient 8678; what is the dividend?

4. The product of four numbers is 37072962, three of them are 58, 79, 87; what is the fourth number?

5. The divisor and quotient are equal; their sum is 15906, and the remainder is the greatest whole number possible. Find the dividend.

6. The dividend is 76841397, the quotient is 175436, the remainder 429; what is the divisor?

7. Add together the sum, difference, product and quotient of 849 and 5397093.

8. Find the sum of 9 times $(437+509+865+723)$ and 11 times $(437+509+865+723.)$

9. After 965 has been subtracted 2796 times from a certain number, there is a remainder of 961; from what number did I subtract?

10. 19 horses and 28 cows are worth 2623 dollars and 11 horses are worth $935. Find the value of 13 cows.

11. By what number must 87019364 be increased to make it exactly contain 647?

12. Find the sum of seventy thousand, eight hundred and nineteen, sixty-seven thousand, nine hundred and eighty, two hundred and ten thousand, five hundred and sixty-seven, seven hundred thousand and sixteen, fifteen thousand and fifty, seven thousand and seventy.

EXERCISE VI.

1. How often must 7864 be added to itself to make 228056?

2. In a school there are four divisions; in the first division there are 33 boys and 18 girls, in the second 27 boys and 31 girls, in the third 24 boys and 29 girls, and in the fourth 42 boys and 26 girls. How many pupils are there in the school? How many more boys than girls are there?

3. How long will it take 21 men to do a work which 19 men can do in 84 days?

4. By what must the product of 769 and 87 be increased to make 47958×697?

5. A man gave 43992 dollars, the price paid per acre being the difference between 165 dollars and 87 dollars; how many acres did he buy?

6. What number must be subtracted 9087 times from 7960934 so as to leave 722 for a remainder?

7. What is 9 times the product of the sum and difference of 4187 and 678?

8. What number contains 6807 as often as 4480814 contains 598?

9. Four numbers multiplied together give 160679376; the first number is 54, the second is 24 greater than the first, the third is equal to the sum of the first and second. Find the fourth number.

10. The sum of two numbers is 432, the smaller number is 36. What is the difference between their product and quotient?

11. The dividend exceeds the quotient by 41819020, the quotient exceeds the remainder by 88944, the quotient is 89356. Find the divisor.

12. Find nine numbers, each greater than 219, whose sum is 2059?

EXERCISE VII.

1. A carpenter earns $18 a week; his expenses are $45 a month; how many years will it take him to pay for 72 acres of land worth $44 per acre?

2. A man gave $8470 for a number of horses; he sold a certain number of them at $76 each for $1900, gaining $150; how many horses did he buy?

3. What must 76049 be multiplied by to give a product of 56884652?

4. Find the value of 4 piles of wood, each containing 13 cords, if 17 cords be worth $85.

5. Find the least number that must be subtracted from 70861543 so that the remainder may be exactly divisible by 4509.

6. The product of three numbers is 20483064; the first number is 248, the second is 59 less than the first; what is the third?

7. How often can 874153 be taken from 6119071? Do this by subtraction.

8. A farmer owned property worth $24350; he gave $4350 to his second son, which was $1250 less than the eldest son received, and divided the remainder equally among his nine daughters. Find the share of each daughter.

9. Find the sum of 67, 79, 84, 45, 72, 328, 4019, and sixty thousand and forty-eight.

10. The factors of a certain number are 7, 23, 31 and 47; what is 13 times the number?

11. Seven times the difference of two numbers is 98, and nine times the larger number is 1404; what is the smaller number?

12. Express in Roman numerals 1794.

EXERCISE VIII.

1. From the sum of 97 and 86 take 34, multiply the difference by 847 and divide the product by 121.

2. How many times does the sum of 4740 and 4345 contain their difference?

3. What number must be added to the sum of three thousand and ninety-five, four thousand nine hundred and eighty, seven thousand four hundred and fifty-seven, twelve thousand and twenty-one, to make the result 46032?

4. What number multiplied by 897 will give the same product as 9867 multiplied by 7486?

5. Find the sum of all the numbers ending in 7 and 9 between 76 and 121.

6. The dividend is 434809916, the quotient 76309, and the divisor 5698. Find the remainder without dividing.

7. The quotient is 7 times the remainder, the divisor is 72 less than the quotient, the divisor is 1279. Find the dividend.

8. Find the product of ninety thousand eight hundred and forty-seven by seven thousand and thirty-nine.

9. Eleven times the subtrahend is 98401897; the remainder is thirteen times 50697; what is the minuend?

10. Find the value of $761-849+276+98-47-74-317+923+478-1079$.

11. If 18 oxen be worth \$864, how many oxen can be bought for \$3168?

12. A man raised 480 bushels of wheat, 372 bushels of oats, and 257 bushels of barley in one year. He sold the wheat at 96 cents a bushel, the oats at 45 cents a bushel, and the barley at 73 cents a bushel; how much money did he receive?

EXERCISE IX.

1. What must be added to the product of 8709 and 69 to make the sum thirty-seven thousand and ninety-six less than a million?

2. A drover paid out at one time \$144, and at another time \$265; he had left \$73 more than he paid out; what sum of money had he at first?

3. How many times must 749 be added to 805 to make 13538?

4. A dealer in horses sold 16 for \$2240, gaining \$24 on each horse; what did eleven horses cost him?

5. Of what number is 78609 both divisor and quotient?

6. If a certain number be multiplied by 473, and 20475 be added, the result is 40567927. Find the number.

7. How often does the product of 33945 and 7253 contain 6789?

8. Eight times the product of two numbers is 49860288; the multiplicand is 6472; what is the multiplier?

9. Write in words 10019076.

10. By what must 941725 be increased to make it equal to 12 times 489276?

11. The sum of six numbers is forty thousand nine hundred and seventeen; five of them are 4876, 9127, 4763, 8294 and 7328. Find the sixth number.

12. A has $347, B has $29 more than A, C has $48 less than A and B together, D has $87 more than the other three. How much money have they all?

EXERCISE X.

1. A has $198, B has $17 more than A, C has $8 less than five times as much as the other two together have; how much money has C?

2. How many days must a boy labor at 45 cents a day, so that after paying $2.75 for a pair of boots, and $1.35 for a hat, he may have $3.55 left?

3. A farmer sells his 60-acre farm in Ontario at $72 per acre, and with the money purchases land in the "Prairie Province" at $6 per acre; how many acres of land can he purchase

4. How often will five millions seven hundred and fifty thousand one hundred and thirty-one contain eight hundred and twenty-seven?

5. If 19 mules cost $1710, what will 12 mules cost?

6. Find the least number that must be taken from 5651853 so that the remainder will exactly contain the difference between 4673 and 5462.

7. 6854 votes were polled for A and B; A got 3948 votes, how many more votes did A get than B?

8. What number multiplied by 385 will give the continued product of 2040, 693 and 108?

9. Thirteen times the sum of two numbers is 4017, and 9 times the smaller number is 1296. Find the larger number.

10. When horses are selling at $140 each, how many cows at $36 each, must I receive in exchange for 18 horses?

11. From 7086159346 subtract 947269238, and divide their difference by 478.

12. A and B are 432 miles apart. A travels 25 and B 23 miles each day, how many days before they meet?

EXERCISE XI.

1. The quotient is 23 times the divisor, the divisor is 17 times the remainder; if the quotient be 297551, find the dividend.

2. Two men 75 miles apart travel towards each other, one at the rate of three, and the other at the rate of four miles an hour; how far apart will they be at the end of 8 hours?

3. The sum of two numbers is 1843, the smaller number is 97; find their quotient.

4. Add \$7093, \$874, \$37 and \$10968; subtract \$3085 from the sum, and multiply the difference by 76.

5. What number added to the sum of all the numbers that exactly contain 7 between 9 and 90 will make 1000?

6. A drover bought 144 cattle at \$43 each. He sold 45 head at \$56 each, 52 at \$38 each, and the remainder at \$49 each, how much did he gain?

7. How often does $6\times8\times12\times14\times16\times18$ contain $9\times7\times4\times3$?

8. If A had \$900 more he could pay a debt of \$2400 and have \$68 left; how much money has he?

9. From seven millions eighteen thousand and thirteen take twenty-seven thousand five hundred and sixty-eight. Express your answer in words.

10. By selling my horse for \$128 I lost \$40; what would I have gained had I sold him for \$200?

11. The product of two numbers is 270728547466, one of them is 381569; find the other.

12. Write in Roman numerals, 947 and 1883.

EXERCISE XII.

1. A dealer in horses bought a certain number for \$36480, and sold them for \$43776, gaining \$16 on each one. How many horses did he buy?

2. How often does 18 times the sum of 712 and 623 contain their difference?

3. The quotient obtained by dividing 6882467358 by a certain number is 790543; by what number did I divide?

4. 17 men can do a piece of work in 52 days; how many men will it take to do the work in 13 days?

5. There are 48 pounds in a bushel of barley. How many bushels are there in 25296 pounds?

6. How many pounds of tea at 48 cents a pound can be got for 768 bushels of wheat at 94 cents a bushel?

7. Find the sum of $781.19, $246.24, $769, $87.05, $9.63, 76 cents, $4.00.

8. The product of four numbers is 21248136; two of them are 46 and 63, and the third is 31 less than the sum of the first two. Find the fourth number.

9. In a man's orchard there are 64 apple-trees; each tree has on an average 216 apples; how many pecks will they fill if each peck hold 24 apples?

10. How much more will remain if I subtract 8956 from the sum of 497806 and 238957, than if I subtract 8956 from the difference of 497806 and 238957?

11. If 14 horses be worth $1680, what will 9 car-loads, each containing 12 horses, be worth?

12. What number taken 5493 times from 20203621 will leave for remainder 367?

EXERCISE XIII.

1. The sum of two numbers is 1243796, the greater number is 864691. By how much does the greater number exceed the smaller?

2. How much is 7 times the product of the sum and difference of 1189 and 895?

3. 440636171 is 72593678 greater than the product of two numbers; one number is 4837; what is the other number?

4. The sum of two numbers is 73106, the smaller number is 8749. Find the product of the two numbers.

5. By how much does 57986×769 exceed the product of 57986 and 749?

6. A teacher pays \$144 for board, \$98 for clothes, \$32 for books; his travelling expenses are \$56; he saves \$470. What is his salary?

7. The product of two numbers is 1520138776, one of the numbers is 52156; what is their sum divided by 767?

8. A farmer bought a number of horses at \$73 each; how many will he require to sell at \$99 each to gain \$468?

9. What number must be added to the product of 8439 and 7608 so that the sum may exactly contain the difference between 9130 and 3847?

10. A man exchanged 84 bushels of wheat worth \$1.20 a bushel, for oats, at 41 cents a bushel and \$18.80 in cash. How many bushels of oats did he receive?

11. The product of two numbers is 58087412, and 7 times one number is 6818, what is 7 times the other number?

12. What number multiplied by 379 will give the same product as 7845×1895?

EXERCISE XIV.

1. The minuend is 70894132, the remainder is 15917889; by how much does the subtrahend exceed the remainder?

2. After spending $400, I had left $40 more than three times as much as I spent. How much money had I at first?

3. If 34 yards of cloth cost $238, find the cost of 69 pieces, each containing 43 yards.

4. By what number must 81374 be divided to give 1179 for a quotient and 23 for a remainder?

5. If 160 acres of land cost $13280, how many acres can be bought for $31125?

6. 19 horses and 4 times as many cows are worth $4256; each horse is worth $96. Find the value of 48 cows.

7. A man bought a number of acres of land at $79 an acre, and the same number of acres at $47 an acre; he paid for it $117684. How many acres did he buy?

8. Add together the product, sum, quotient and difference of 2924 and 68.

9. The remainder is 78 less than the divisor, the quotient is eleven times the divisor. The quotient is 9493. Find the dividend.

10. What number contains 847 as often as 338465988 contains 4879?

11. A man bought 56 cows; he sold 29 of them at $34 each, and the remainder at $25 each, and by so doing lost $131. What did each cow cost him?

12. How often does the product of 5964 and 5467 contain four times their difference?

EXERCISE XV.

1. Find the value of $\frac{385 \times 468 \times 95 \times 87 \times 171}{55 \times 78 \times 19 \times 57 \times 29}$.

2. Divide \$699896 equally among 89 persons.

3. How many acres of land at \$58 per acre must be given in exchange for 6 farms, each containing 140 acres at \$87 per acre?

4. A drover bought 24 sheep at \$9 each, twice as many cows at four times as much per head, and three times as many horses as cows at three times as much per head. Find the total cost.

5. What will 163 pounds of tea cost if \$27.75 pay for 37 pounds?

6. What number multiplied by 144×37 will give the continued product of 864, 96, 74?

7. By what number must the product of 6578 and 974 be increased, so that the sum may exactly contain the sum of 49, 74 and one hundred and twenty-six?

8. After 689 has been taken from a certain number eleven times the remainder is 838794; what is the number?

9. 1935474 is how many times 398?

10. What number added to the sum of 70896, 987, 3469, 58732, 29 and 4336 will make one million one thousand and one?

11. I start with \$4860; what shall I have left if I give to each of 23 persons \$85, and to each of 29 others \$72?

12. Multiply 90870063 by 70896. Prove your answer by division.

EXERCISE XVI.

1. The product of three numbers is 14303429; the first number is 59, the second is seven times the first; what is the third number?

2. I sold part of my farm for $485; the part left is worth $230 more than five times the value of the part I sold. Find the value of the farm.

3. What number must be subtracted from 37068142 to get a remainder exactly divisible by 458?

4. The sum of three numbers is 289177; the smallest number is 79468, the greatest is 45505 more than the smallest. What is the other number?

5. The sum of the product of two numbers and 8479 is 4389217; one of the numbers is 762. Find the other.

6. $387 \times 156 \times 365$ is how many times $73 \times 43 \times 12$?

7. In a drove of 360 animals, 85 are horses, 148 cows, and the remainder sheep; the sheep are worth $8 each, the cows four times as much as the sheep, and the horses five times as much as the cows. Find the value of the drove.

8. Multiply 479683257 by 96087.

9. The difference between the product of two numbers and 499 is 4426589; one of the numbers is 596. Find the other number.

10. If 43 barrels of apples cost $172, how many barrels can be bought for $1944?

11. How much greater is 58963 taken as an addend 7 times than 57649 multiplied by 7?

12. $84732 + 29476 + 72859 + 47325 + 68497 + 56839 + 80963$ is how many times 17?

EXERCISE XVII.

1. Divide 37608591743 by 4897.

2. What number added to 876 times 728549 will give 638214761?

3. By how much does the sum of 8375926 and 6897439 exceed 9 times their difference?

4. 25 horses and 37 cows are worth $6151; nine horses are worth $1575. How many cows can be bought for $2736?

5. A cutter cost $38, a wagon $4 more than twice what the cutter cost, and a carriage $15 more than three times what the wagon cost. Find how much money was paid for all.

6. How many times can the difference between 11004 and 10218 be subtracted from 8 times their sum?

7. What number must be added to the sum of 4592, 6748 and 7659 diminished by the difference between 9132 and 3839 to make a million?

8. A farmer exchanged 46 bushels of wheat worth $1.28 per bushel, for oats worth 43 cents a bushel and $26.63 in cash. How many bushels of oats did he receive?

9. What number must be added to 76912743 to get a sum that will exactly contain 867?

10. What number besides 4397 will exactly divide 24658376?

11. If 416342 acres of land be divided equally among 89 persons, what would each receive?

12. A man bought a certain number of acres of land at $49 per acre, and the same number of acres at $78 per acre; he paid for it $31750. How many acres did he purchase?

EXERCISE XVIII.

1. Multiply 59863746 by 80793.

2. How many times 488 is 671 times 12096?

3. From 9 times the difference between 47138254 and 76085143 take the continued product of 97, 84, 53 and 108.

4. By subtraction find how often 7869345 may be taken from 55085415.

5. The quotient is nine times the divisor; the divisor is seven times the remainder; the quotient is 22617. Find the dividend.

6. The divisor and quotient are equal, their sum is 153098; what is the dividend?

7. Eleven times the remainder is 48374535; the subtrahend is 13 times 845937. Find the minuend.

8. Multiply 95868 by 697 and divide the product by 8364.

9. Find the product of the sum and difference of 87437 and 76859.

10. How often must 876 be added to 483 to make twenty thousand six hundred and thirty-one?

11. Divide the difference between 30765914839 and 18796435947 by 5397.

12. If 84 men can do a piece of work in 76 days, how many men will be required to do the work in 21 days?

EXERCISE XIX.

1. Add together 5893, 6378, 2437, 6229, 7815, 3436, 8794 and eighty thousand and seventeen.

2. An American horse dealer gave \$12600 for a certain number of horses; he sold 48 of them for \$7680, gaining \$20 on each horse. How many horses did he buy?

3. The remainder is $1243 \div 11$; the quotient is 95892 greater than the remainder, and 47522588 less than the dividend; what is the divisor?

4. If one acre of land be worth \$84, how many acres can be purchased for \$545160?

5. The product of two numbers is 73504180728, the multiplier is 8397; what is the multiplicand?

6. Find the quotient of $219 \times 301 \times 729 \times 27$ divided by $43 \times 81 \times 73$.

7. A man gave 9 barrels of flour for 54 bushels of wheat. What was the wheat worth per bushel, when \$120 would buy 20 barrels of flour?

8. Find the value of nine farms, each containing 225 acres, if 56 acres be worth \$3808.

9. If 119 tons of iron cost \$11543, what will 374 tons cost?

10. If 7 pounds of tea be worth 21 pounds of coffee, and 4 pounds of coffee be worth 96 cents, find the value of nine pounds of tea.

11. Divide 27893605429 by 89.

12. If 5 hats cost as much as 9 pairs of gloves, and one pair of gloves costs \$1.25, how many hats can be bought for \$38.25?

EXERCISE XX.

1. Find the difference between the product of 76085 and 79 and $116206798 \div 17$.

2. The sum of two numbers is 950239, and seven times the smaller number is 1328222 ; by how much does nine times the smaller exceed twice the larger ?

3. Find the total value of 49 bushels of wheat at $1.14 a bushel, 73 bushels of peas at 67 cents, 68 bushels of barley at 84 cents, and 54 bushels of oats at 36 cents.

4. A dry goods merchant bought 67 pieces of cloth, each piece containing 94 yards, at $2.40 per yard, and sold it at $2.88 per yard. What profit had he ?

5. What number must be added to the product of the sum and difference of 96035 and 87659 to make it exactly contain 509 ?

6. A drover bought 17 head of cattle at $24 each, 13 head at $27 each, and 26 head at $32 each ; at how much per head must he sell them so as to gain $369 ?

7. Put down 67984×11 as an addition question. What is the sum ?

8. What number must be taken 109065 times from 83762154 so as to leave 234 for remainder ?

9. How much less is the product of 7683 and 498 than the product of their sum and difference ?

10. A dealer in cattle bought 130 head of cattle at $70 each, and 85 head at $65 each ; he sold the whole lot at $93 each. Find his gain.

11. 98 times what number is 137592 ?

12. A certain number when divided by 28 gives 769 ; what would be the result if the number were multiplied by 28 ?

EXERCISE XXI.

1. How many times must 5487 be added to itself to make 203019 ?

2. A man bought three farms, at $6400 each, and gave for them 98 horses at $146 each, and the rest in money. How much money did he give ?

3. There are 12 inches in a foot, and 5280 feet in a mile. How many inches are there in 78 miles ?

4. What number multiplied by $324 \times 435 \times 72$ will give $567 \times 783 \times 216 \times 80$?

5. If four times 9 pounds of tea cost $30.24, how many pounds can be bought for $41.16 ?

6. The sum of two numbers is 4712 ; the larger number is 4123. By how much does the product of the numbers exceed their quotient ?

7. Multiply 76839 by 597, and 82764 by 845, and divide the difference between these products by 43×9.

8. Bought 3496 bushels of wheat at $1.28 per bushel, and sold the whole for $6100.17. Find the gain.

9. The difference between 632602 and 628419 is how many times 89 ?

10. The sum of two numbers is 79562 ; the smaller number is 5873. How much greater is the sum of the two numbers than their difference ?

11. Divide 79413827695 by 63, using factors.

12. 52 cows are worth $1924; one horse is worth as much as four cows. Find the value of 63 horses.

EXERCISE XXII.

1. Multiply 547876593 by 9378.

2. A farmer has 28 cows, which he values at $45 each; he exchanges them for sheep worth $9 each. How many sheep should he get?

3. How many times 438 will make 1679 multiplied by 576?

4. Bought 648 pounds of maple sugar at 11 cents per pound, and sold it at the rate of 84 cents for 6 pounds. Find the gain.

5. A grocer bought 28 chests of tea, each containing 64 pounds, and three times as many boxes of coffee, each box containing 12 pounds. He paid 25 cents per pound for the coffee, and three times as much for the tea. Find the cost of both.

6. What number divided by 78 will give the product of 49, 56 and 84?

7. How much greater is 756 times the sum of 48763 and 43956, than 756 times their difference?

8. What number must be added to the product of 9764 and 8975 so that the sum may exactly contain their difference?

9. If $69 \times 84 \times 93 \times 28$ be divided by $21 \times 7 \times 23 \times 31$, find seven times the quotient.

10. The smaller of two numbers is 99307, and their difference is 7639. Find the quotient of their sum divided by three times their difference.

11. Find the difference between $(523413 \times 87 \div 957)$ and $(76849 \div 23 \times 92)$.

12. Divide 91384652 by 3768.

EXERCISE XXIII.

1. What number must be taken from the difference between 796832145 and 327964568 to have a remainder equal to the sum of 769438 and 875694

2. By what number must $23 \times 47 \times 95$ be multiplied to give 3080850 ?

3. What number is that from which if 289375 be taken the remainder is 345759 less 87496 ?

4. How many loads of apples, each load containing 32 bushels, at 43 cents per bushel, can be bought for $165.12 ?

5. 27 men and 64 boys earn $61.49 in a day ; each man earns 95 cents per day; what does each boy earn ?

6. How many times 315 is 567×85 ?

7. How many months will it take a man to pay for a house and lot worth $1080, if he earn $63 a month and his expenses be $18 a month ?

8. The product of four numbers is 38556336 the first number is 49, the second is 3 greater than the first, and the third is 4 less than the sum of the first and second. Find the fourth number.

9. What number must be taken from the sum of all the numbers that exactly contain 8 between 20 and 98, to leave 17×13 for remainder ?

10. Divide $39345 \times 98 \times 67$ by 7869.

11. If a train go 315 miles in nine hours, how many hours will it take to go 455 miles ?

12. The product is 40215432, and the multiplier is three times 283 ; what is the multiplicand ?

EXERCISE XXIV.

1. If a certain number be divided by 789, and 1895 be taken from the quotient, the remainder is 53078 ; what is the number ?

2. 237316747 divided by 67 is how many times 827?

3. If 7 acres of land cost $483, how many acres can be bought for $58305?

4. If 18 men can dig a ditch in 42 days, how many men will be required to dig it in 27 days?

5. What number divided by 463 will give the same quotient as 40215432 divided by 849?

6. 784 added to the product of three numbers is 301742; the first number is 49, the second is 25 greater than the first. Find the third number.

7. There are two numbers of which the product is 6656634, and the greater number is 8469; find the sum of the two numbers.

8. What must be added to the product of 5215 and 5694, so that the sum may exactly contain their difference?

9. The dividend is 77988547338, the quotient is 86943754; what is the divisor?

10. A man bought 84 horses for $11424; he sold them at $168 each. Find his gain.

11. Find by subtraction, how often 129486 can be taken from 842973, and express the last remainder in words.

12. How many cows worth $48 each must be given for 76 acres of land worth $84 per acre?

EXERCISE XXV.

1. Find a number such that if it be added to fifty-seven times 9658, the sum will be 578195.

2. If 17 yards of silk cost $136, how many bushels of potatoes at 64 cents per bushel, must be given for 12 yards of silk?

3. What number divided by 3985 will give 4796 for a quotient and 2376 for a remainder?

4. What number is that to which if 9 times 87 and 429 be added the sum will be 67354 less 59867?

5. If eleven times 49 be added to the product of two numbers, the result is 40383791; one of the numbers is 7 times 78. What is the other number?

6. A farmer bought a certain number of cows at $38 each, and the same number of horses at $96 each; he paid for all $2814. How many of each did he buy?

7. If 17 tons of hay cost $204, how many stacks, each containing 9 tons, can be bought for $1188?

8. A dealer bought 27 geese for $12.15, and sold them at a gain of 7 cents each; how many cents did he get for each goose?

9. From the sum of 769428 and 396247 take 876943, multiply the difference by 5872 and divide the product by 734.

10. A drover bought a certain number of cows for $1008, paying $42 for each cow; he sold them at a gain of $144. How many dollars did he get for each cow?

11. If 56 masons can build a wall in 16 days, how many masons will be required to build it in 28 days?

12. After 37 has been added to a certain number, 19 times the sum is 16644; find nine times the number.

THIRD CLASSES.

EXERCISE I.

1. How many times must 8397 be added to itself to make 722142 ?

2. A person bought 48 turkeys at the rate of 3 for $2.40, and sold them at the rate of 4 for $3.84 ; how much did he gain ?

3. A man bought a certain number of horses for $8400 ; he sold a number of them for $4845 at $85 each, losing $855. How many horses did he buy ?

4. The divisor is 13 times greater than the quotient ; the remainder exceeds the quotient by 67 ; the divisor is 504. Find the dividend.

5. A grocer buys 120 lbs. of tea for $72; he keeps 30 lbs. for his own use. At what price per lb. must he sell the remainder to gain $6.30 ?

6. A teacher has a salary of $1100 a year ; how much may he spend per week in order that he may save $632 in the year ?

7. What number is that to which if 817698 be added the result is 674983 multiplied by 57689 ?

8. If 49 masons receive $3528 for 24 days' work, how much a day is that for each man ?

9. If 14 pounds of tea be worth 42 pounds of coffee, and 18 pounds of coffee be worth $4.32, find the value of 56 pounds of tea.

10. How often must 869 be added to 376 to make 34267 ?

11. A tea merchant mixes 21 lbs., worth 48 cents a lb.; 36 lbs., worth 63 cents a lb.; and 45 lbs., worth 72 cents a lb. At what price per pound must he sell the mixture so as to gain $5.22 ?

12. What number must be added to the product of the sum and difference of 47963 and 38795 in order that the sum may be exactly divisible by 567 ?

EXERCISE II.

1. Find the greatest number that will exactly divide 714 and 882.

2. If 16 pounds of tea are worth 48 lbs. of coffee, and 11 lbs. of coffee are worth 44 lbs. of sugar, how many pounds of sugar are worth 21 lbs. of tea ?

3. A house and lot together, cost $4270, the house being worth 6 times as much as the lot. How much more did the house cost than the lot ?

4. The quotient is three times the divisor, the divisor is 7 times the remainder, and the sum of the three is 232 ; what is the dividend ?

5. Find the greatest common measure of 1081, 2679 and 3196.

6. The quotient is 81228, the dividend is 457968321 ; if the quotient exceed the remainder by 76371, by how much does the divisor exceed the remainder ?

7. If a horse be worth $168, how many carloads, each car containing 12 horses, can be bought for $46368 ?

8. What is the largest whole number which will divide 973 and 1578, leaving as remainders 24 and 45 respectively ?

9. If 7 horses are worth 21 cows, and 8 cows are worth 32 sheep, and 13 sheep are worth \$91, find the value of 29 horses.

10. 46 men can do a piece of work in 76 days, in how many days can 19 men do a piece of work twice as great?

11. By what number must 968 be multiplied to give 847 times 65968?

12. 25836 pounds of coffee are put into boxes, an equal number of each, containing 7 lbs. and 5 lbs. How many boxes will be required?

EXERCISE III.

1. Find the smallest number that will exactly contain 324, 360 and 432.

2. Find the value of 4704 pounds of barley at 64 cents per bushel.

3. The product of four consecutive numbers is 11880; what are the numbers?

4. A farmer bought land from one man at \$65 an acre, and the same number of acres from another man at \$74 per acre. The whole amount paid was \$66025. How many acres did he buy from each?

5. A person bought a certain number of barrels of flour for \$2700; he kept 30 barrels for use, and sold the remainder for \$3360, which was \$840 more than cost. How many barrels did he buy?

6. The sum of two numbers is 9590, and their difference is 5798; what are the numbers?

7. Find the least number which, divided by 146, 219 and 365 gives 23 for a remainder in each case.

8. Divide $7200 among A, B and C, so that A may have three times as much as B, and B twice as much as C.

9. A grain buyer bought 796 bushels of wheat at $1.12 per bushel, and sold the whole for $995. Find his gain on each bushel.

10. Find the largest number that will exactly divide 93992 and 186248.

11. The product of four numbers is 33066912; the first number is 24, the second is 29 more than the first, the third is 134 less than three times the sum of the first and second. Find the fourth number.

12. What is the smallest sum of money with which I can purchase horses at $128 each, oxen at $72 each, cows at $48 each, or sheep at $12 each?

EXERCISE IV.

1. By what number must the product of the sum and difference of 44865 and 40097 be divided to give 679696 as a quotient?

2. A drover bought a number of cows for $5120; he sold a certain number of them at $38 each, for $2660, gaining $420. Find the number he bought.

3. A ship sails 8844 miles in 67 days, how many miles will she sail in 49 days?

4. Brown had 57 cows, Boyd had 38 horses each sold his animals for $2736, how much per head did Brown receive less than Boyd?

5. Divide $1280 between two brothers, giving the elder $148 more than the younger.

6. The remainder is 104, the quotient is 663609 more than the remainder, the dividend is 451987825 more than 8 times the sum of the remainder and quotient. Find the divisor.

7. Find the G. C. M. of 6749, 14292 and 44861.

8. The product of two numbers is 567991870908, eleven times the multiplier is 641036; what is the multiplicand?

9. Nine times the sum of two numbers is 15426, and thirteen times their difference is 2288; what are the numbers?

10. How often does the greatest common measure of 3465, 4095 and 5040 contain the G. C. M. of 945, 1485 and 2160?

11. How many bushels of oats will weigh as much as 816 bushels of barley?

12. If 7 horses or 21 cows be worth $840, what will 9 horses and 7 cows be worth?

EXERCISE V.

1. After 7683 had been subtracted 4896 times from a certain number, the remainder was 7682; what was the number?

2. How often can the G. C. M. of 329, 517, 940 and 1175 be taken from their L. C. M?

3. How many sheep can be got for 756934 horses if 7866 sheep are worth as much as 874 horses?

4. How many bushels of oats are equal in weight to 68 bushels of barley and 51 bushels of wheat?

5. To what number must 63 be added so that the sum will exactly contain 187, 119, 85 and 34?

6. What number increased by 784, and the result decreased by 4986 gives 75693?

7. The G. C. M. of three numbers is 29, and their L. C. M. is 11165; what are the numbers?

8. If 47 mules cost $3666, how much must I sell 28 of them for to gain $252 on those sold?

9. Find the largest number that will exactly divide 6768, 16544, 15134.

10. A grocer sells 2400 boxes of strawberries at the rate of 8 boxes for 48 cents, gaining $24. How much did he pay for each box?

11. Divide $1190 among A B and C so that A may get 3 times as much as B, and B 4 times as much as C.

12. Divide 79213845 by 462, using four factors. State how to find the correct remainder.

EXERCISE VI.

1. What is the total value of 4380 pounds of wheat and 3264 pounds of oats, the oats being worth 43 cents per bushel, and the wheat three times as much per bushel as the oats?

2. A and B are 4560 miles apart, and approach each other at the rate of 32 miles and 44 miles per day respectively. In how many days will they meet, and how many miles farther will B have travelled than A?

3. A clerk has a salary of $1200 a year; he pays $5 a week for board, and $8 a month for other expenses. How much will he save in seven years?

4. Bought 42 calves for $378, how much less per head should I have paid, if I had purchased 12 more calves with the same money

5. If 4 men do as much work as 9 boys, how many men will do as much work as 13 men and 36 boys?

6. The average attendance at a school for one week was 54; on Monday 56 pupils were present, on Tuesday 49, on Thursday 53; the number on Wednesday was the same as that on Friday. Find the number of pupils present on Friday.

7. Find the least number that will exactly contain any one of the following: 21793, 31806 and 80104.

8. A certain number is multiplied by 9, and then 89 is taken from the product; the remainder is then divided by 11, giving 113 for the quotient. what is the number?

9. Bought 60 gallons of wine at $2.20 per gallon. How much water must be added so that $21 may be gained by selling it at $1.70 per gallon?

10. Purchased 48 yards of silk at $3.20 per yard; if the price per yard had been 80 cents less, how many more yards could have been purchased with the same money?

11. What will be the cost of 26490 feet of timber at $8.49 for 283 feet?

12. What number will contain the product of 7, 9 and 29 as often as 214723662 contains 5386?

EXERCISE VII.

1. Find the sum of the following fractions: $4\frac{1}{2}$, $8\frac{1}{4}$, $12\frac{1}{8}$, $16\frac{1}{16}$ and $20\frac{1}{32}$.

2. If $\frac{2}{3}$ of a number exceeds $\frac{4}{15}$ of it by 91, what is $\frac{2}{3}$ of the number?

3. A man sold two town lots for $900 each; on the one he gained $\frac{1}{5}$ of the cost, and on the other he lost $\frac{1}{5}$ of the cost. Find his entire loss on the sale of the two lots.

4. What must be added to 91473 to make it exactly contain 65, 91, 117 and 156?

5. By selling tea at 76 cents a lb. a merchant loses $\frac{4\frac{1}{5}}{8}$ of the cost. Find cost of 18 pounds.

6. A man gave $\frac{1}{4}$ of his money to A, $\frac{1}{5}$ to B, $\frac{3}{10}$ to C, and the remainder to D; B received $72 less than D. How much did each receive?

7. Byron's money equals $\frac{7}{9}$ of $6300, and Byron's is $23\frac{1}{3}$ times Norman's; how much money has Norman?

8. Divide $8\frac{1}{5}$ into two parts, such that one shall be greater than the other by $\frac{3}{10}$.

9. A, B and C start on a trip, each with $60 in his pocket, and agree to divide their expenses equally. When they return A has $31.50, B $29.64, and C $10.86. How much should A and B pay to C to settle their accounts?

10. A can do a piece of work in 9 days, and B can do it in 15 days; in what time can they together do a work 8 times as great?

11. A farmer sold $\frac{2}{3}$ of his sheep to A, $\frac{1}{7}$ of the remainder to B, and $\frac{2}{3}$ of what he then had to C; he had left 40 sheep. How many sheep had he at first?

12. What is the least number that must be taken from $214\frac{1}{3}$ so that the remainder may exactly contain $17\frac{1}{5}$?

EXERCISE VIII.

1. Find the value of $\frac{5}{12}$ of a farm, if $\frac{7}{13}$ of it be worth \$4284.

2. The product of three numbers is $194\frac{2}{3}$; the first number is $2\frac{1}{4}$, the second $5\frac{1}{7}$. What is the third?

3. Divide the sum of the two largest of the following by the difference between the two smallest: $\frac{3}{13}$, $\frac{5}{9}$, $\frac{7}{12}$, $\frac{2}{3}\frac{3}{6}$.

4. Express $\frac{3}{7}$ of $1\frac{1}{20}$ of $\frac{1}{12}$ as a fraction having 560 for its denominator.

5. I own $\frac{2}{4}\frac{9}{1}$ of a vessel, and sell $\frac{1}{5}\frac{3}{5}$ of my share; the part I have left is worth \$2970. Find the value of the whole vessel.

6. Find a fraction equal to $\frac{1}{15}$ whose numerator is 44 less than its denominator.

7. If the multiplicand were 546 more it would be 769900; if the product were 718936 less it would be 1167581714 multiplied by 5. Find the multiplier.

8. What will 24 chests of tea cost, if each chest contain $41\frac{1}{3}$ pounds, and 7 lbs. be worth \$4.55?

9. The divisor is $\frac{5}{9}$ of $\frac{1}{2}\frac{3}{5} + \frac{1}{6}\frac{3}{6}$ of $\frac{3}{9}$ of $\frac{4}{6}\frac{8}{5}$, the quotient is $\frac{4}{11}$ of $8\frac{4}{5}$ of $\frac{1}{6}\frac{9}{4}$ of $\frac{1}{9}\frac{9}{5}$, the remainder is $\frac{4}{4}\frac{3}{9} \div \frac{8}{9}\frac{6}{1}$. What is the dividend?

10. If $39\frac{3}{5}$ bushels of wheat sow 18 acres, how many fields, each containing 15 acres, will 231 bushels sow?

11. Divide \$920 between A and B, giving A $\frac{5}{9}$ as much again as B.

12. Find the least common multiple of 153999, 252327 and 528513.

EXERCISE IX.

1. By what number must the sum of $4\frac{2}{5}$, $7\frac{3}{8}$, $9\frac{7}{10}$ and 11 be increased to give $54\frac{1}{3}$?

2. A farmer sold 3072 pounds of barley on Monday, 3216 pounds on Tuesday, 2832 pounds on Wednesday, 3504 pounds on Thursday, and 86 bushels on Friday. He received 68 cents per bushel for it; how much money did he get?

3. After the sum of 98 equal numbers has been multiplied by 23 the result is 11939438; find one of the numbers.

4. Find the value of 7 loads of wheat, each containing 28 bags, and each bag weighing 135 pounds, when 12 bushels are worth $11.16.

5. The difference between two numbers is $182\frac{5}{6}\frac{5}{3}$; the greater number is $432\frac{3}{7}$; find 9 times the smaller number.

6. If $\frac{5}{1\,9}$ of a mine be worth $7200, what is the value of $\frac{4}{7}$ of the remainder of it?

7. Add together the sum, difference, product and quotient of $\frac{5}{6}\frac{1}{4}$ and $\frac{1}{2}\frac{7}{4}$.

8. Find the prime factors of 8778.

9. John can do a work in 8 days; James can do the same work in 10 days, Peter in 12 days, and Henry in 15 days. In what time can they together do a work 6 times as great?

10. Twelve cows are worth as much as six oxen, and 32 oxen are worth as much as 16 horses, and 9 horses are worth $1296; find the value of two yoke of oxen and six cows.

11. Find the smallest number which will contain each of the numbers 413, 708 and 885, and give a remainder in each case equal to twice their greatest common measure.

12. Samuel Smith sold six bushels of clover seed at $7.50 per bushel; he bought 28½ lbs. of tea at 64 cents per pound, 44 lbs. of coffee at 20¼ cents per pound, 33⅓ lbs. of raisins at 12 cents per pound, and 56 lbs. of sugar at 8½ cents per pound. How much money did he bring home?

EXERCISE X.

1. What is the smallest number whose quotient when it is divided by 13, will exactly contain 18, 24, 27 or 63?

2. A merchant lost $\frac{5}{7}$ of his capital, and then gained $600 and was then worth $3400. How much money did he lose?

3. The remainder is 663 less than three times the product of 26 and 14; the quotient is 61 less than 162 times the remainder; the dividend is 38121342 greater than the product of the quotient and remainder. What is eight times the divisor?

4. A farmer had 672 bushels of wheat, 1056 bushels of barley, and 1632 bushels of oats, which he wished to put into the least number of bins containing the same number of bushels, without mixing the three kinds; what number of bushels must each bin hold, and how many bins of each kind of grain would there be

5. I sold a load of oats at 36 cents per bushel, and with three-fourths of the proceeds, purchased 162 pounds of sugar at 12 cents per pound; how many pounds of oats were in the load?

6. If $\frac{7}{19}$ of an acre produce 91 bushels of potatoes, what will $3\frac{5}{13}$ acres produce?

7. I gave $\frac{4}{27}$ of my money to A, $\frac{6}{23}$ of the remainder to B, $\frac{9}{17}$ of what then remained to C; I lost $70 and had still left $170. How much money had I at first?

8. I sold 288 bushels of wheat at $1.25 per bushel, and bought with the money an equal weight of barley at 72 cents per bushel. How much money had I left?

9. A grocer sold tea at 63 cents per pound and by so doing lost $\frac{2}{9}$ of the cost; he raised the price to 96 cents per pound. What will he gain on 48 lbs. at the latter price?

10. Find the least common multiple of 252, 378, 630 and 882.

11. Nine times the product of two numbers is 579625335; two thirds of the multiplier is 458. Find the multiplicand.

12. If 17 lbs. of cheese cost 2.29\frac{1}{2}$, how many boxes, each containing 60 lbs., can be bought for $218.70?

EXERCISE XI.

1. The sum of 39 equal numbers divided by 15 gives 1001; find one of the numbers.

2. Find a number such that if it be added twenty-nine times to thirty thousand and thirty the sum will be 43834.

3. What is the smallest number which, after having been multiplied by 39 will exactly contain 52, 78 or 117?

4. $65\frac{3}{7}$ is $\frac{4}{9}$ of what number?

5. If 28 pounds of sugar are worth 56 oranges, and 21 oranges are worth 63 apples, and 13 apples are worth 26 cents, how many pounds of sugar can be bought for $3.24?

6. Colin Cameron willed $48000 to his family; he left $\frac{1}{3}$ to his wife, $\frac{1}{16}$ of the remainder to each of his five sons, and divided what was then left equally among his six daughters. How much did each daughter receive?

7. Seven times the sum of two numbers is 1288168, and half their difference is 4419; what are the numbers?

8. I sold a house for $9639, gaining $\frac{3}{4}$ of $\frac{5}{8}$ of the cost; what was two-thirds of the cost?

9. Two-ninths of a field is planted with corn, two-fifths with potatoes, one-third with turnips and the remainder, which is half an acre, with onions. How many acres are there in the field?

10. Three times the product of two numbers is 142861134, and $\frac{7}{13}$ of one number is 3227. Find five times the other number.

11. What number must be taken from the sum of $93\frac{1}{3}$ and $27\frac{1}{4}$ to leave a remainder equal to the sum of $8\frac{1}{6}$, $9\frac{3}{4}$ and $\frac{7}{8}$?

12. The factors of a number are $3\frac{1}{5}$, $4\frac{1}{8}$, $7\frac{1}{3}$ and $2\frac{5}{11}$; find fifteen times the number.

EXERCISE XII.

1. 41058443853 is nine times the product of two numbers; the product is five thousand and eighty-nine times the multiplicand. What is 12 times the multiplicand?

2. A grocer purchased tea at 51 cents a lb., and sells it so as to gain $\frac{2}{3}$ of $4\frac{1}{2}$ of $\frac{1}{17}$ of the cost price; find what he received for 136 chests, each chest containing 45 lbs.

3. If 39 were added to a certain number, $\frac{2}{3}$ of $5\frac{2}{3}$ of $\frac{1}{12}$ of $6\frac{1}{4}$ of the sum would be 145; what is the number?

4. A man spent $\frac{3}{7}$ of his money, and found that $\frac{4}{19}$ of the remainder was \$1736. How much money did he spend?

5. I sold $\frac{7}{16}$ of my farm at one time, $\frac{2}{3}$ of the remainder at another, and what was then left for \$5640 at \$47 per acre; how many acres were there in the farm?

6. Divide \$3240 among A, B and C in the proportion of 8, 9 and 10.

7. The difference between two numbers is 995, which is $\frac{19}{37}\frac{9}{07}$ of their sum; find the numbers.

8. A merchant bought goods for \$8760, and sold them for \$10640. What part of the cost was the gain?

9. Reduce $\frac{2}{4}\frac{2}{6}\frac{1}{8}\frac{5}{5}\frac{6}{3}\frac{9}{2}\frac{9}{4}\frac{6}{1}\frac{4}{9}$ to its lowest terms.

10. A man gave $\frac{7}{12}$ of his money to A, and $\frac{2}{3}$ of it to B; $\frac{7}{11}$ of the difference between their shares is \$84. How much money had he?

11. A carriage-maker sold a carriage for \$198, gaining \$16 and $\frac{1}{6}$ of the cost. What was the cost?

12. What number is that from which if 19 be taken the remainder will be exactly divisible by 21, 24, 28 and 36?

EXERCISE XIII.

1. A flour merchant bought a quantity of flour for \$10800, and sold it for \$15750, gaining \$2.75 a barrel. How many barrels did he buy?

2. Find the value of $\frac{5\frac{1}{2} - \frac{3}{4} \text{ of } \frac{7}{8} + 1\frac{5}{12}}{4\frac{4}{7}}$ of \$48.

3. A cistern has three pipes which will fill it in 18, 24 and 36 minutes respectively. In what time will the three pipes running together fill it?

4. Two men start from the same place and travel in the same direction, at the rate of $4\frac{1}{2}$ and $6\frac{1}{4}$ miles per hour respectively; if they travel 8 hours each day, in how many days will they be 350 miles apart?

5. Bought 12 chests of tea, each containing 64 pounds, at 52 cents per lb. Sold 576 lbs. at 68 cents per pound and the remainder at cost. How much did I gain on each pound?

6. The sum of 43 equal numbers is 28214 less than the product of 637 and 53; find one of the numbers.

7. 26 oranges or 39 lemons are worth 78 cents; what is the value of 5 dozen lemons and 4 dozen oranges?

8. Find four fractions whose numerators shall be 4, 6, 11 and 14 respectively, and their sum equal to unity.

9. James spent \$96 less than half his money, and had left \$384; how much money had he at first?

10. Find the greatest common measure of 391, 493, 612 and 629.

11. If $\frac{5}{19}$ of a work can be done in 35 days, what part of the work will be done in 38 days?

12. A farmer spent \$29952 in purchasing an equal number of sheep, cows and horses; the sheep cost \$8 each, the cows \$24 each, and each horse 4 times as much as each cow. How many animals did he buy?

EXERCISE XIV.

1. A grain buyer bought 15540 pounds of wheat at $1\frac{1}{2}$ cents a pound, and sold it at \$1.15 per bushel. Find his gain.

2. The difference between the product of two numbers and 397 is 4507505; one of the numbers is 798. What is the other?

3. Find the value of the butter made from 22680 pounds of milk, if butter be worth 19 cents per pound, and it take 24 lbs. of milk for one pound of butter.

4. What will $13\frac{1}{5}$ yards of silk cost, if $8\frac{1}{4}$ yards cost \$19.80?

5. What number is that from which, if 96 be taken, $\frac{1}{7}\frac{7}{3}$ of the remainder is 1530?

6. A man gave $\frac{1}{2}\frac{3}{2}$ of his money to A, and the remainder to B; A received \$168 more than B. How much money did each receive?

7. After a certain number has been increased by $\frac{2}{8}\frac{2}{5}$ of itself the result is 1254; find the number.

8. Find the least number of marbles a box must contain so that they can be divided into lots of 7, 8, 10, 12 or 15 and leave 3 marbles in the box.

9. If a carpenter can do $\frac{3}{5}$ of a work in 24 days, how long will it take him to do $\frac{5}{6}$ of the work?

10. Find the greatest number which will divide 10397 and 54018, leaving as remainders 48 and 61 respectively.

11. If 376 be added 29 times to itself, by how much does the sum exceed ten thousand and ninety-nine?

12. After a certain number has been multiplied by 78, seven-thirteenths of the product is 376866. What is the number?

EXERCISE XV.

1. A boy bought a number of apples for 84 cents, at the rate of 13 for 7 cents, and sold them at the rate of 12 for 9 cents. What was his gain?

2. After the product of two numbers has been multiplied by 31, the result is 5718570; six thirteenths of the multiplier is 36. Find the multiplicand.

3. If to A's money you add $\frac{1}{3}$ of it and \$28 the sum will be \$220. How much money has he?

4. A horse costs \$160, and $\frac{1}{16}$ of the cost of the horse is twice the cost of a cow. Find the cost of nine horses and nine cows.

5. A certain number was taken 787319 times from 673945218 and there was a remainder of 154. What was the number?

6. Find the greatest common measure, and also the least common multiple of 34, 85, 119, 136 and 204.

7. A boy lost $\frac{2}{15}$ of his money, and had left money enough to purchase 63 marbles, at the rate of 9 for 4 cents. How much money did he lose?

8. Geo. Grant expended $3720 in buying horses; for each of seven of them he paid $84, and for each of the others $108. How many did he purchase?

9. The sum of 18 equal numbers multiplied by 15 is 6534; find one of the numbers.

10. Find the smallest number that must be added to the least common multiple of 26, 65, 78 and 143, so that the sum will exactly contain 19.

11. If 47 horses are worth 611 sheep, and 168 sheep are worth $1512, how many horses can be bought for $3276?

12. Find the value of 14 boxes of cheese, each containing 65 lbs., at 12 cents per pound, and 18 firkins of butter, each weighing 36 lbs., at 23 cents per pound.

EXERCISE XVI.

1. A number increased by 26 times itself amounts to thirteen millions, four hundred and fifteen thousand, five hundred and seventy-one; find the number.

2. If $\frac{5}{9}$ of a ton of iron cost $55, how much more will $13\frac{1}{3}$ tons cost than $8\frac{1}{3}$ tons?

3. The product of four consecutive numbers is 255024; what are the numbers?

4. What is the smallest sum of money with which I can purchase sheep at \$9 each, cows at \$39 each, oxen at \$65 each, or horses at \$104 each?

5. What is $\frac{7}{12}$ of the sum of the 8 numbers that follow the number eighty thousand six hundred and ninety-four?

6. If 24 men can do a piece of work in 32 days, how many days will it take 16 men to do $\frac{3}{4}$ of the work?

7. A banker sold a house for \$3340, losing \$160 and $\frac{2}{5}$ of the cost. What was the cost of the house?

8. From $8951\frac{5}{12}$ subtract $\frac{2}{3}$ of $10\frac{1}{2}$ of $59\frac{1}{5}\frac{1}{7}$.

9. Mr. Morgan bought 69 cows; he sold 23 of them for \$54 each, and the remainder for \$52 each, and found that he had gained \$322 by the transaction; what did each cow cost him?

10. The divisor is equal to the sum of the quotient and remainder; the quotient is $\frac{1}{6}$ of the remainder; the remainder is 582. Find the dividend.

11. After spending $\frac{1}{12}$ of my money, and then $\frac{4}{11}$ of the remainder, I had left money enough to buy 132 acres of land at \$56 per acre. How much money had I at first?

12. The G. C. M. of 3 numbers is 47, and their L. C. M. is 18095; what are the numbers?

EXERCISE XVII.

1. A farmer purchased a certain number of sheep for \$540; he lost 12 of them and sold the remainder for what they cost him and received \$432 for them. How many did he purchase?

2. The product of two numbers is 3621120; one of the numbers is $\frac{5}{17}$ of 16728; the other is 8 times what number?

3. 3 hens and 8 geese are worth \$5.15, and 3 hens and 15 geese are worth \$9.00. Find the value of 2 hens and 5 geese.

4. $\frac{4}{9}$ of the sum of two numbers is 2600, and $\frac{3}{8}$ of their difference is 1950. How many times does the larger number contain the smaller?

5. An agent sold \$3600 worth of goods, receiving for his trouble \$3.75 for every \$100 worth he sells; how much money did he receive?

6. Find the value of $\frac{2}{3}$ of $\frac{3}{4}$ of $\frac{4}{11}$ of $\frac{22}{27}$ of 18738 pounds of wheat at \$1.05 per bushel.

7. I exchanged 2940 pounds of wheat for flour, receiving 40 pounds of flour for each bushel of wheat. How many barrels of flour should I get, allowing 196 pounds to the barrel?

8. What number multiplied by 72, and the product divided by 54 will give 48 for a quotient?

9. After 689 has been added to the sum of 29 equal numbers, the result is 170832; find seven times one of the numbers.

10. 6 horses, 9 cows and 15 sheep together cost \$1065; a horse is worth \$90, which is twice the cost of a cow. Find the cost of 65 sheep.

11. Find the least common multiple of 485, 776, 873 and 1164.

12. The divisor is 39 times the quotient, the quotient is 21 times the remainder; the divisor is 71253. Find $\frac{9}{29}$ of the dividend.

EXERCISE XVIII.

1. A merchant having \$30000 expended $\frac{11}{16}$ of it for cloth at \$2.50 per yard; how many yards did he buy?

2. A has 1395 sheep, and $\frac{4}{15}$ of his number is equal to $\frac{3}{4}\frac{1}{3}$ of B's; how many sheep has B?

3. A garrison of 1520 men has 416955 pounds of flour; how many days will it last them, allowing each man $\frac{7}{16}$ of a pound per day?

4. There were $\frac{5}{7}$ of [illegible] of sheep stolen, and 2460 were left; how many more were left than were stolen?

5. A gentleman spent $\frac{1}{3}$ of his life in London, $\frac{1}{4}$ of it in Guelph, $\frac{1}{8}$ of it in Brantford, and the remainder of it, which was 13 years, in St. Thomas; what was his age when he died?

6. If $\frac{2}{3}$ of $3\frac{3}{4}$ pounds of tea cost $\$1\frac{7}{8}$, what will $8\frac{1}{2}$ pounds cost?

7. A farmer exchanged 960 pounds of wheat worth \$1.15 per bushel for 31 bushels of oats and \$6 in money. What were the oats worth per bushel?

8. Bought $48\frac{2}{3}$ pounds of tea for $\$27\frac{3}{8}$; how many pounds can be bought for \$378?

9. A man bought a drove of cattle for \$15540, and after selling 280 of them, at \$43 each, and the remainder at \$25 each, he found that he neither gained nor lost. How many did he buy?

10. A boy spent $\frac{4}{5}$ of his money, and then found that \$27 was $\frac{3}{5}$ of what he had left; how much money had he at first?

11. Find the least number from which 18, 36, 54, 81 and 108 can be subtracted an exact number of times.

12. What number is that to which if 49 be added $\frac{7}{2\frac{7}{3}}$ of the sum is 6895?

EXERCISE XIX.

1. A man and a boy can chop a cord of wood in 3 hours; the man alone can chop it in 5 hours; how many hours will it take the boy to chop 2 cords?

2. If $\frac{2}{3}$ of $1\frac{1}{4}$ of $\frac{1}{2\frac{2}{7}}$ of an acre of land be worth \$17, what will 9 times 12 acres be worth?

3. 54 bushels of wheat and 21 bushels of clover seed are worth \$182.55, and 4 bushels of clover seed are worth \$25; find the value of 175 bushels of wheat.

4. If 97 horses eat 291 tons of hay in a winter, how many tons will 184 horses eat in 6 winters?

5. $\frac{2}{5}$ of $\frac{5}{7}$ of a number exceeds $\frac{1}{4}$ of it by 59; what is the number?

6. What is the smallest number that must be added to $329\frac{1}{3}$ to make it exactly contain $18\frac{2}{3}$?

7. What number must be multiplied by $28\frac{2}{3}$ that the product may be $21\frac{1}{2}$ times $93\frac{1}{3}$?

8. A grocer sold tea at 84 cents per pound and by so doing gained $\frac{1}{6}$ of the cost; if he had sold it at 96 cents per pound, what part of the cost would he have gained?

9. A can do a work in $4\frac{2}{3}$ days, and B in $5\frac{3}{4}$ days; in what time can they together do the work?

10. Find the smallest number that must be added to 4527139 to make it exactly contain 48, 64 and 72.

11. If $\frac{1}{10}$ of a ship cost \$8500, what will $\frac{1}{2}\frac{3}{5}$ of it cost?

12. Resolve 102102 into its prime factors.

EXERCISE XX.

1. Simplify $\dfrac{\frac{7}{8}+\frac{3}{4} \text{ of } \frac{1}{3}}{1\frac{1}{2}-\frac{5}{6} \text{ of } \frac{1}{3}} \div 3\frac{7}{9}$.

2. John and James can do $\frac{5}{8}$ of a work in 10 days, working together; John alone can do $\frac{3}{4}$ of the work in 18 days. In what time can James do the work?

3. A, B and C bought 56 cows at \$45 each, and 280 sheep at \$8$\frac{1}{2}$ each. A paid $\frac{3}{7}$ of the money, B $\frac{3}{8}$ of the remainder and C the rest. How much more money did C pay than B?

4. How many years will it take a man to pay for 87 acres of land worth \$60 per acre, if he earn \$19 per week, and spend \$408 per year? (1 year = 52 weeks.)

5. How often does the sum of $28\frac{1}{4}$ and $19\frac{3}{5}$ contain their difference?

6. A person sold 17 horses for \$1666 gaining $1\frac{1}{3}$ of the cost. Find the cost of 9 of the horses.

7. Divide $74\frac{1}{3}$ into two parts such that one shall be greater than the other by $8\frac{3}{5}$.

8. I sold a load of pease at 84 cents per bushel, and with $\frac{5}{7}$ of the money bought 36 pounds of tea at 70 cents per pound, how many bushels were in the load?

9. A man gave $\frac{1}{10}$ of his money to A, $\frac{3}{4}$ of the remainder to B, and had left \$64; how much money did A get?

10. If 11 horses and 12 cows are worth $1350, and 4 cows are worth $120, find the value of 17 horses.

11. A person sold a farm for $6900, losing $\frac{5}{28}$ of the cost. For how much should he have sold it to have gained $\frac{3}{10}$ of the cost?

12. The L. C. M of three numbers is 59059 and their G. C. M. is 59. Find the numbers.

EXERCISE XXI.

1. If 9 be added to both terms of the fraction $\frac{5}{12}$, will its value be increased or decreased, and by how much?

2. A drover sold 49 cows for $1372, losing $\frac{1}{5}$ of the cost, what was the cost of 27 of the cows?

3. Reduce $\frac{9}{17}$ to an equal fraction, whose numerator is 32 less than its denominator.

4. How many bales of hay, each weighing 49$\frac{1}{3}$ pounds, can be made out of four loads, each containing 1776 pounds?

5. If 19 cows cost $912, what is the value of 54 sheep if 27 sheep cost as much as 5 cows?

6. How many horses must be bought at $85 each, and sold for $130 each, in order to gain $1665?

7. Jones has two farms, one of 81$\frac{2}{3}$ acres, and the other 123$\frac{5}{8}$ acres; he sells 96$\frac{2}{3}$ acres; how many acres has he left?

8. A man has an income of $1237 a year; how much money can he spend per week, and still save $249 in the year?

9. What number is that to which if you add 17 times itself and 79, the sum is 1807?

10. The average of four numbers is 729, the first is 678, the second 897, and the third 1064; what is the fourth number?

11. A grain merchant bought a certain number of bushels of barley at $1\frac{3}{4}$ cents per pound, and sold in at 93 cents per bushel, and by so doing gained $7.83. How many bushels did he buy.

12. What must be added to the sum of $4\frac{1}{2}$, $3\frac{5}{8}$, and $11\frac{7}{9}$ to make $\frac{5}{11}$ of $49\frac{1}{2}$?

EXERCISE XXII.

1. What is the smallest number that must be added to 89 times the L. C. M. of 21, 35, 56, 63, and 140, so that the sum may exactly contain $\frac{5}{7}$ of the G. C. M. of 2303, 3619 and 13818?

2. A grocer bought $7\frac{1}{4}$ cords of wood at $3\frac{1}{5}$ a cord, and paid for it with tea at 87 cents per pound; how many pounds of tea were required to pay for the wood?

3. The remainder is 76 less than seven times the difference between the least common multiple of 24, 36, 96 and 120, and the greatest common measure of 376, 517, and 658; the quotient is 133542 less than 63 times the remainder; the dividend is 356813100 more than 19 times the sum of the quotient and remainder. What is the divisor?

4. A grocer gained $7.90 by selling $56\frac{3}{7}$ pounds of tea at the rate of 27 pounds for $18.09; find the cost price of 25 pounds.

5. A farmer purchased 18 bushels of wheat at 2 cents per pound, and thus spent 60 cents more than $\frac{1}{3}$ of his money. How much money had he?

6. Two persons own a farm together; the one owns $\frac{7}{16}$ of it, and the other the remainder and the difference between their shares is 28 acres. Find the value of the farm if $\frac{3}{7}$ of it be worth \$74 per acre and the remainder \$83 per acre.

7. A father gave $\frac{4}{9}$ of his money to his son, and the remainder to his daughter; the daughter received \$720 less than the son. How much money did the son receive?

8. Simplify $8\frac{1}{3} - \frac{1}{2} + \frac{3}{5}$ of $\frac{1}{3} - \frac{1}{2} \div \frac{1}{4}$.

9. If 16 be taken from both numerator and denominator of the fraction $\frac{3}{4}\frac{9}{8}$, how much greater or smaller will it become?

10. C has $\frac{1}{3}$ as much money as B, and B has $\frac{1}{4}$ as much as A, and A has money enough to buy 126 acres of land at \$32 per acre. How much money have B and C together?

11. A confectioner bought oranges at \$3.36 per box, each box containing 14 dozen oranges, how many boxes must he sell at the rate of 19 oranges for 57 cents to gain \$30.24?

12. An American drover has \$3791, which he wishes to expend in purchasing horses and sheep. He wants to purchase as many horses as he can with the money and lay out the balance in buying sheep. He paid \$136 for each horse, and \$7 for each sheep. How many animals did he buy?

EXERCISE XXIII.

1. What is the least number that must be taken from $217\frac{2}{3}$ so that the remainder may exactly contain $18\frac{1}{3}$?

2. If $\frac{3}{11}$ of a mine be worth \$2100, find the value of $\frac{1}{2}$ of $\frac{5}{11}$ of the remainder.

3. A Wine merchant mixed 72 gallons of wine worth \$1.48 per gallon with 24 gallons of water; what was the mixture worth per gallon?

4. How many bushels of oats and barley, an equal number of each, are as heavy as 41 tons of hay? (1 ton=2000 pounds.)

5. How much must I add to \$8.47 to have a sum equal to the difference between \$19$\frac{3}{4}$ and \$58.97$\frac{1}{2}$?

6. If a boy buys lemons at the rate of 13 for 39 cents and sells them at the rate of 9 for 45 cents, how many must he buy and sell to make a profit of \$5.60?

7. $\frac{7}{8}$ of A's money is equal to $3\frac{1}{5}$ times B's; if A has \$3600 how much money has B?

8. A farmer bought 17 head of cattle at \$48 each, and 21 head at \$56 each; at what price per head must he sell them so as to gain \$402 by the transaction?

9. A merchant expended \$1620 for goods, and then had left $\frac{42}{67}$ as much money as he had at first; how much money had he left?

10. If a person travel 252 miles in 7 days of 9 hours each, how many miles can he travel in 13 days of 8 hours each?

11. Resolve 889056 into its prime factors.

12. Find the value in dollars and cents of 27 horses at £32 each; the pound being worth \$4.86$\frac{2}{3}$.

EXERCISE XXIV.

1. A man expended $121.44 in purchasing wheat at $1.14 a bushel, barley at 67 cents a bushel, and pease at 72 cents a bushel, buying the same quantity of each. Find the total number of bushels bought.

2. A land speculator bought six farms, each containing 80 acres, and sold them for $35040, gaining $6 per acre by the transaction. What did he pay for two of the farms?

3. Find the largest number that will divide 1913, 2486 and 4239, leaving as remainders 17, 37 and 52 respectively.

4. Find the cost of the following articles:

408 pounds of oats at 43 cents per bushel.
1008 pounds of barley at 76 cents per bushel.
32 pounds of sugar at 8 pounds for $1.00.
18 pounds of coffee at 6 pounds for $1.44.
26 pounds of tea at 3 pounds for $1.92.

5. After giving away $\frac{2}{13}$ of my money, and then $\frac{3}{11}$ of the remainder, I have left $29.40 less than $198.12. How much money did I give away?

6. What number is that $\frac{4}{13}$ of which is less than $\frac{9}{19}$ of it by 369?

7. Out of a cask which had leaked away $\frac{3}{7}$, 88 gallons were drawn, and then the cask was found to be $\frac{2}{5}$ full. How many gallons did the cask contain?

8. A merchant having $16000, spent $\frac{7}{8}$ of it for cloth at $3.50 per yard. How many yards did he buy?

9. If 7 lbs. of tea cost $4.48, and 5 lbs. of tea cost as much as 16 lbs. of coffee, how much will $19\frac{2}{3}$ pounds of coffee cost?

10. A owns $\frac{5}{21}$ and B $\frac{2}{5}$ of a bank; A's share is \$92000 less than B's; what is the capital of the bank

11. Find a fraction equal to $\frac{1}{27}$ whose numerator is $\frac{2}{3}$.

12. If 4 men or 8 women can do a piece of work in 63 days, in what time will 8 men and 5 women do the work?

EXERCISE XXV.

1. John has $\frac{5}{6}$ of $\frac{3}{4}$ of \$88.56; James has $\frac{3}{11}$ of $3\frac{1}{7}$ of $\frac{3}{8}$ of \$143.36; Henry has $\frac{1}{11}\frac{2}{3}$ of \$173.68. How much money have they together?

2. The greatest common measure of four numbers is 151, and their least common multiple is 2569567. Find the numbers.

3. After 324 has been taken from a certain number, $\frac{4}{5}$ of $\frac{3}{7}$ of the remainder is 2768; find the number.

4. B bought 87 gallons of wine at \$1.65 per gallon; 5 gallons leaked out; he put in 14 gallons of water and then sold the mixture, gaining \$27.33; at what price per gallon did he sell the wine?

5. A fortune of \$5700 is to be divided between two brothers; the elder brother received \$11 for every \$8 that the younger received. How much does each get?

6. How much water must be mixed with 48 gallons of milk, at 21 cents a gallon, to get a mixture worth 16 cents a gallon?

7. What number must be subtracted from 964137 to make it exactly contain 26, 39, 52 and 143?

8. $1434.08 is divided among 56 men and a certain number of boys; each man receives $16.48, and each boy $11.36. Find the number of boys.

9. Bought $27\frac{1}{2}$ yards of broadcloth at $\$6\frac{2}{5}$ per yard, and $19\frac{1}{3}$ pounds of tea at $\$1\frac{5}{16}$ per pound; how much money did I spend?

10. Multiply $8\frac{1}{3}$ by $8\frac{1}{3}$, and add the result to $5\frac{1}{2} + 9\frac{5}{6}$.

11. A man worth $16496 gave $\frac{3}{8}$ of it to his son, $\frac{4}{5}$ of the remainder to his daughter, and $\frac{1}{2}$ of what he then had to his wife. How much money had he left?

12. A owns $\frac{1}{2}\frac{1}{7}$ of a vessel, and B the remainder; A's share is worth $8765 less than B's share; what is the value of $\frac{3}{4}$ of B's share?

EXERCISE XXVI.

1. A poultry dealer bought 228 turkeys at the rate of 7 for $4.55, and sold them, gaining $31.92; for how much per dozen did he sell them?

2. $\frac{3}{7}$ of a number is taken from $\frac{1}{3}\frac{1}{5}$ of it, and the remainder is 2144; what is $\frac{1}{3}\frac{3}{5}$ of the number?

3. By what number must $\frac{2}{3}\frac{2}{3}$ be divided to give a quotient of $\frac{4}{7}$?

4. A person gave $\frac{7}{2\,3}$ of his money to A, and divided the remainder equally among B, C and D; C received $960, how much did A receive?

5. If 378 were added to a certain number, 89 times the sum would be 106978; find $\frac{7}{8}$ of the number.

6. The remainder is 3789, the quotient 258219, the dividend 18766942998732; what is the divisor?

7. 67 horses are worth as much as 268 cows, or 1340 sheep; if 19 sheep be worth \$152, find the value of 13 cows and 18 horses.

8. Find the smallest number that will exactly contain 54, 63, 81 and 144 after 37 has been added to it.

9. John has $\frac{5}{9}$ as much money as James, and James has $\frac{4}{7}$ as much as Robert; if Robert had \$847 more he would have \$17647. How much money have they all?

10. If 16 men can do $\frac{3}{8}$ of a piece of work in 27 days, how many days will it take them to do the remainder of the work?

11. $\frac{2}{3}$ of $3\frac{3}{5}$ of an estate is worth \$6800, what is the value of $\frac{11\frac{2}{3}}{38\frac{8}{9}}$ of it?

12. A tea merchant bought 9 chests of tea, each containing 65 pounds, at 63 cents per pound; he kept one chest for his own use, and sold the remainder at a profit of 9 cents per pound; find his gain by the transaction.

EXERCISE XXVII.

1. B and C have equal shares in a field of wheat which yields 284 bushels; B takes 97 bushels and C the rest, paying B \$48.15; find the value of the field of wheat.

2. What number is that from which, if you subtract 186 and multiply the remainder by 59, seven-eighths of the product is 37583?

3. After taking from my purse $\frac{1}{6}$ of my money, I find that $\frac{3}{4}$ of what is left amounts to \$148.65; how much money had I at first?

4. A person buys 120 eggs at the rate of 3 for 2 cents, and 120 more at the rate of 5 for 3 cents; what does he gain or lose by selling all of them at the rate of 8 for 5 cents?

5. The greatest common measure of two numbers is 129, and their least common multiple 15351; find the numbers?

6. A merchant bought 769 yards of cloth and sold it for $2553.08, losing $123.04; what was the cost of 79 yards?

7. A man bought a horse for $195, which was $45 less than $\frac{8}{9}$ of what he sold him for; how much did he gain by the transaction?

8. 3 cows are worth 8 calves, and 18 sheep are worth 6 cows; find the value of 19 sheep if 7 calves be worth $63.

9. What number is that from which, if $\frac{5}{17}$ of 867 be taken, and $\frac{1}{3}\frac{1}{3}$ of 966 be added to the remainder, the result is 76720?

10. A person bought a house with $\frac{5}{13}$ of his money; he spent $\frac{3}{4}$ of the remainder in buying 59 acres of land at $84 per acre; how much money had he at first?

11. If 7 pounds of tea be worth $4.06 and 9 pounds of coffee be worth $2.34, how many pounds of tea and coffee, an equal number of each, can be bought for $39.48?

11. What is the cost of 192 bags of wheat, each weighing 115 pounds at $1.08 per bushel?

EXERCISE XXVIII.

1. $\frac{2}{5}\frac{3}{9}$ of the G. C. M. of 3 numbers is 69, and $\frac{5}{11}$ of their L. C. M. is 39585; find the numbers.

2. A is worth \$1497, B is worth \$186 more than three times as much as A. C is worth \$3689 less than five times as much as A and B together. D is worth \$589 more than the other three together. How much are they all worth?

3. After a certain number has been added, 48 times to 68975 the sum is 102431; find the number.

4. Bought 968 bushels of wheat at the rate of 17 bushels for \$18.36 and sold it at the rate of 43 bushels for \$50.74; what was my gain on the transaction?

5. Find the largest number that will exactly divide 11496, 20597 and 24429 after 81 has been added to it.

6. Of the pupils who wrote at a promotion examination $\frac{1}{15}$ failed in Reading, $\frac{1}{10}$ in Arithmetic, $\frac{1}{12}$ in Spelling, $\frac{2}{21}$ in Grammar, $\frac{1}{20}$ in Geography and 508 passed; find the number of pupils who wrote.

7. A man lost $\frac{1}{3}$ of his property at one time, and $\frac{1}{5}$ of it at another; he afterwards bought a house and lot for \$4580, and had still \$5276 left. What was he worth at first?

8. Find the remainder after 9584 has been subtracttd from 88789980979 as often as possible.

9. A farmer sold 2 horses for \$210 each; on the one he gained $\frac{1}{5}$ of the cost, and on the other he gained $\frac{1}{6}$ of the cost. How much did he gain on the horses?

10. A clerk's salary is \$700 a year, and his personal expenses are \$6 per week; how many years before he will be worth \$7544, if he has \$2500 at the present time?

11. A speculator bought 360 acres of land at $38 per acre, and sold a certain number of acres of it at $46 per acre for the sum of $10120; the remainder he sold at a gain of $16 per acre and received in payment $280 in cash, and the balance in sheep at $7 each. How many sheep did he receive?

12. Purchased 27 horses for $3996, and 56 acres of land for $4424; how much more did 17 horses cost than 29 acres of land?

EXERCISE XXIX.

1. Find the largest number from which if 97 be taken the remainder will exactly divide 3696, 5808 and 8448.

2. A miller bought 370 bushels of wheat at 90 cents per bushel and 240 bushels at 85 cents per bushel; he sold 480 bushels for $440.80; what did the remainder cost him per bushel?

3. A can do a work in $2\frac{2}{5}$ days, B in $2\frac{2}{7}$ days, and C in $4\frac{4}{11}$ days; in what time can they together do the work?

4. The remainder is forty-thousand and fourteen, the quotient is seven million, sixty-nine thousand eight hundred and thirty-five, and the dividend is 487161160359: what is the divisor?

5. The price of a sheep is $\frac{1}{4}$ of $\frac{4}{5}$ of $\frac{3}{5}$ of $\frac{5}{16}$ of the price of a cow, and 829 sheep are worth $7461; how many cows can be bought for $4698?

6. The L. C. M. of 12, 15, 18, 24 and another number prime to them is 16920; find the number.

7. Two persons start from the same place and travel in the same direction, one at the rate of $3\frac{3}{4}$ miles per hour for 8 hours each day, and the other at the rate $4\frac{1}{3}$ miles per hour for 9 hours each day; in how many days will they be 522 miles apart?

6. A farmer purchased a certain number of acres of land for \$120785, and sold 1840 acres of it at \$63 per acre; he afterwards sold the remainder at \$84 per acre and gained \$47635 by the whole transaction. How many acres did he buy?

7. A drover sold $\frac{3}{13}$ of his flock of sheep at \$7 each for the sum of \$1764. The remainder of the sheep he exchanged for cows, giving 7 sheep for 3 cows; how many cows did he get?

10. A man had $72\frac{1}{4}$ tons of hay; he sold $\frac{5}{17}$ of it at \$8 per ton, and the remainder at $\$10\frac{1}{2}$ per ton; how much money did he receive for his hay?

11. If 21 men can do a piece of work in 96 days, in how days can they do the same work with the help of 11 more men?

12. A person spent \$76.64 in purchasing an equal number of pounds of tea, coffee and sugar; the tea at $76\frac{1}{2}$ cents per pound, the coffee at $24\frac{3}{4}$ cents, and the sugar at $18\frac{1}{2}$ cents. How many pounds in all did he buy

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EXERCISE XXX.

1. A liquor dealer purchased 1200 gallons wine at $\$3\frac{1}{2}$ per gallon: 80 gallons leaked out; at what price per gallon must he sell the remainder so as to make a profit of \$280 by the transaction?

2. How many barrels of apples, each containing $2\frac{1}{4}$ bushels, can be bought for \$111.60, if 217 bushels cost \$86.80?

3. A sheep-dealer sold 48 sheep for \$288, which was $\frac{3}{10}$ of what he got for the remainder of his flock, which he sold at \$12 each; how many sheep in all did he sell?

4. Eight horses are worth \$960; 26 oxen are worth 13 horses, and 70 cows are worth 28 oxen. Find the value of a span of horses, a yoke of oxen and eight cows.

5. How many bushels of barley and oats, an equal number of each, are equal in weight to 287 bushels of wheat?

6. \$12148.18 is divided among 28 men and 34 women; each man receives \$243.84; what does each woman receive?

7. What is the smallest number, whose quotient when the number is divided by 7, will exactly contain 45, 63, 72 and 117?

8. The product of four consecutive numbers is 1113024, find the sum of the numbers.

9. Find the value of $\frac{\frac{2}{3}+\frac{3}{4}-\frac{5}{8}}{15\frac{1}{2}+1\frac{3}{16} \text{ of } \frac{3}{39}}$ of \$94.

10. Reduce $\frac{4}{9}$, $1\frac{1}{2}$, $1\frac{3}{16}$ and $\frac{7}{24}$ to equal fractions, having 432 for denominator.

11. The difference between the product of two numbers and 869 is 437951278 nine times one of the numbers is seventy-thousand two hundred and eighty one; find the other number.

12. Find the prime factors of 213962.

EXERCISE XXXI.

1. Find the least common multiple of all the numbers that exactly contain 16 between 48 and 128, inclusive.

2. Bought a farm in Dakota for \$56320, and sold $\frac{7}{16}$ of it for \$42560 at \$19 per acre. How many acres of land did I purchase, and at what price per acre?

3. The remainder is $\frac{3}{29}$ of the divisor, and the divisor is $\frac{7}{16}$ of the quotient; the remainder is 63. Find the dividend.

4. A drover gave \$11520 for a certain number of cattle, and sold a part of them for \$5670 at \$21 each, and by so doing lost \$3 per head. For how much a head must he sell the remainder to gain \$870 on the whole?

5. The 816th part of a number is 837609. What is the seventeenth part of the number?

6. If 23 pounds of tea be worth 368 peaches, and 79 peaches be worth 158 apples, what is the value of 18 chests of tea, each containing 67 pounds, when 17 apples are worth 34 cents?

7. The sum of three fractions is $\frac{431}{672}$; the first fraction is $\frac{5}{32}$, the second $\frac{7}{48}$. Find the third fraction.

8. If \$$\frac{4}{9}$ buy $\frac{2}{3}$ of a pound of tea, find the value of 87 pounds of tea.

9. A person spent \$9892 in buying calves, sheep, cows and horses; each sheep cost \$12, which was three times the cost of each calf; each horse cost \$144, which was the cost of three cows; there were 19 calves, 38 sheep and 114 cows. How many horses were there?

10. Jones owes Smith $112 21; he gives in payment 45 bushels of potatoes at 37 cents per bushel, 68 bushels of wheat at 97 cents, 23 bushels of apples at 48 cents, and the remainder in oats, at 32 cents per bushel. How many bushels of oats does he give?

11. C has 19 sheep, which is 13 less than the number B has; if A had 26 more he would have three times as many as B and C together. A's sheep are worth $6 each, and B's and C's are worth $9 each. How much more is A's flock worth than B's and C's together?

12. The greater of two numbers is $79\frac{3}{11}$, and their difference is $21\frac{1}{4}$; what is the smaller number?

EXERCISE XXXII.

1. What is the largest number to which, if 89 be added, the sum will exactly divide 3058, 4726 and 13622?

2. A buyer bought 47 head of cattle at $26 ·h, but lost 9 of them by the murrain; at what ·er head must he sell the remainder, so as to ·44 by the transaction?

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6. Twenty-three times the greatest common measure of three numbers is 3404, and $\frac{9}{11}$ of their L. C. M. is 158508. What are the numbers?

7. A farmer has 684 bushels of wheat, 1140 bushels of barley, and 1596 bushels of oats; he wishes to put the grain, without mixing it, into bins of equal size and the largest possible. How many bushels in each bin, and how many bins of each kind of grain?

8. Bell owned $\frac{7}{8}$ of a farm of 2400 acres; he sold $\frac{4}{5}$ of his share to Ross; Ross sold $\frac{3}{11}$ of his share to Roe. Find the value of Roe's land at $19 per acre.

9. What is the smallest number that must be added to the sum of $97\frac{1}{3}$, $48\frac{1}{5}$ and $76\frac{3}{10}$ to make it exactly contain $18\frac{2}{3}$?

10. There are three fractions whose numerators are 17, 18 and 22 respectively, and whose sum is equal to unity. Find the fractions.

11. A, B, C and D have among them $269; B, C and D together have $213; C and D together have $148, and B and C have between them $124. How much more money have B and D than A and C?

12. The sum of $232.32 is divided among 34 men, 48 women and 67 children; each man received $2.40, each woman received $\frac{3}{4}$ as much as each man. How much did each child receive?

EXERCISE XXXIII.

1. Four hundred and seventy-six times a certain number is 41701884; what is 87 times the number?

2. A farmer realizes $900 a year from his farm; his expenses are $7 per week. He is in debt $800, and buys a farm of 109 acres at $32 per acre; in how many years will he be free from debt?

3. $\frac{9}{14}$ of the G. C. M. of three numbers is 63, and thirteen times their L. C. M. is 2037126. Find the numbers.

4. What must be added to the sum of $\frac{3}{8}$, $\frac{7}{5}$, $1\frac{1}{16}$ and $\frac{1}{2}\frac{9}{7}$ to make $4\frac{1}{4}$?

5. A grocer bought 54 chests of tea, each containing 78 pounds, at $39 a chest, and retailed it at 69 cents per pound; what was his profit?

6. By selling an acre of land for $85 I gained $\frac{5}{12}$ of the cost price; what did a farm of 117 acres cost me?

7. What number divided by $\frac{1}{4}$, and the quotient divided by $\frac{1}{7}$ will give 336?

8. A man has $166.30 in his purse; he divided all of it but 28\frac{1}{2}$ among an equal number of men, women and boys; each man received $4.80, each woman $3.20, and each boy $2.60. How many were there of each?

9. How many times can the difference between eighty thousand, one hundred and fifty-seven and seventy-three thousand and eighty-nine, be taken from 687384204?

10. Out of a bin containing $318\frac{1}{2}$ bushels of wheat, $128\frac{7}{12}$ bushels are taken; how many more bushels are left than were taken?

11. A father divided a farm among his three sons; to the eldest he gave 50 acres, to the second son $\frac{5}{12}$ of the farm, and to the youngest son $\frac{3}{8}$ of the farm. How many acres were in the farm?

12. The factors of a certain number are $3\frac{5}{8}$, $\frac{11}{16}$, $1\frac{1}{2}\frac{7}{2}$ and $\frac{5}{13}$. What is ninety-nine times the number?

EXERCISE XXXIV.

1. How often can the G. C. M. of 4434, 6651 and 8129 be subtracted from three times their L. C. M.?

2. A farmer mixed 24 bushels of peas, worth 60 cents per bushel, with 72 bushels of oats, worth 32 cents per bushel. What is the value of 8 bushels of the mixture?

3. If 875 be taken from 7 times a certain number, the result is 65394. What is the number?

4. An American buyer bought a certain number of horses for \$11760; he sold 43 of them for \$5934, and by so doing gained \$18 on each one sold. How many horses did he buy?

5. The quotient is 19 times the remainder; the divisor is equal to the sum of the quotient and remainder; the quotient is 15637. Find the dividend.

6. What is the smallest number that must be added to 3271954857, to make it exactly contain 483?

7. A wine merchant bought 36 gallons of wine at \$3.20 per gallon; he kept 8 gallons for his own use, and after mixing the remainder with water, sold the mixture at \$3.48 per gallon, and gains on his outlay \$30.96. How many gallons of water did he add?

8. What number must be taken from $671\frac{1}{3}$ to leave the sum of $187\frac{3}{8}$ and $249\frac{3}{8}$ for a remainder?

9. A person buys 18 cows at the rate of 9 for $306, and 47 more at the rate of 11 for $418; what will he gain or lose by selling all of them at the rate of 19 for $779?

10. A boy lost $\frac{5}{12}$ of his money; after receiving 63 cents he found that he had $\frac{1}{3}$ of what he had at first. How much money did he lose?

11. How many horses at $\frac{3}{7}$ of $420 each will pay for 225 acres of land at $\frac{4}{5}$ of $144 per acre?

12. Divide $960 among A, B, and C, so that for every $3 A gets, B may get $5, and C $7.

EXERCISE XXXV.

1. Paid $42.72 for a certain number of bushels of potatoes at 48 cents per bushel, part of them being damaged, I sold the remainder at a gain of 25 cents per bushel, receiving for them $55.48. How many bushels were damaged?

2. How many rails will be required to fence a field 1116 feet long by 708 feet wide if the fence be straight, 7 rails high, and the rails the longest that can be used?

3. Find the amount of the following bill:—

$7\frac{1}{4}$ tons of coal, at $6.40 per ton;

510 pounds of oats, at 37 cents per bushel;

$27\frac{1}{2}$ pounds of cheese, at 12 cents per pound;

$17\frac{1}{2}$ yards of cloth, at $1.35 a yard.

4. A farmer bought 225 acres of land; for $\frac{7}{15}$ of it he paid at the rate of $273 for 7 acres, and for the remainder he paid at the rate of $611 for 13 acres; he sold all of it at the rate of $1534 for 26 acres. What was his gain or loss?

5. A farmer sold four loads of barley weighing 3216, 2832, 3024, and 2736 pounds respectively, and 3 loads of ats weighing 2822, 2584, and 2346 pounds respectively. He received 43 cents per bushel for the oats, and 68 cents per bushel for the barley. How much more money did he receive for the barley than for the oats?

6. Nineteen horses are worth 57 oxen, and 17 oxen are worth 34 cows, and 28 cows are worth 112 sheep and 13 sheep are worth $91. How much more are 14 horses and 48 sheep worth than 24 oxen and 32 cows?

7. A person gave to A $\frac{2}{5}$ of his money, to B three times as much as to A, and to C twice as much as to A and B together. With the rest of his money he purchased 45 acres of land at the rate of 9 acres for $513; how much money had he at first?

8. Find the smallest number that will exactly contain 21571, 24827 and 41921.

9. Find the value of $78\frac{3}{5}$ yards of silk, if $9\frac{2}{5}$ yards cost $23.80.

10. Reduce the following fractions to equivalent ones having the same numerator:—

$\frac{6}{7}$, $\frac{8}{9}$, $1\frac{2}{3}$, $1\frac{3}{5}$, and $\frac{3}{3}\frac{9}{7}$.

11. The product of five consecutive numbers is 89927760, find the sum of the numbers.

12. A tailor purchased 18 pieces of cloth, each containing 24 yards, at $2.75 per yard, and made from it 54 suits of clothes. How much must he receive for each suit in order to gain $194.40?

FOURTH CLASSES.

EXERCISE I.

1. The sum of £192, 0 s., 8 d. is divided among a certain number of boys, each boy receiving £3, 8 s., 7 d. How many boys were there?

2. A can do a work in $\frac{4}{11}$ of a day, B in $\frac{6}{13}$ of a day, and C in $\frac{2}{9}$ of a day. In what time can they together do the work?

3. Five pounds of tea and 4 lbs of coffee are worth \$4.71, and 6 lbs of tea and 3 lbs of coffee are worth \$5.22; find the value of 2 lbs. of tea and 2 lbs. of coffee.

4. Divide \$9800 between A and B, so that $\frac{4}{5}$ of A's money will be equal to $\frac{5}{6}$ of B's.

5. Divide $\frac{1}{2}\frac{4}{5}$ into two parts, so that one shall be greater than the other by $\frac{1}{3}$.

6. How many gallons of water must be mixed with 420 gallons of wine, worth \$2.80 per gallon, to reduce the price to \$2.10 per gallon?

7. Sold 84 eggs for 14 cents, gaining $\frac{1}{7}$ of the cost. Find the cost of the eggs per dozen.

8. Find a fraction equal to $\frac{8\frac{1}{4}}{11\frac{1}{6}}$ whose numerator is $18\frac{1}{2}$ less than its denominator.

9. If a bushel of wheat cost £$\frac{3}{5}$, and a bushel of barley cost £$\frac{2}{5}$, how many bushels of wheat and barley, an equal number of each, can be bought for £48?

10. Find the cost of carpeting a floor 35 feet long and 27 feet wide, with carpet 2 feet 4 inches wide, worth 88 cents per yard.

11. The average of four numbers is $21\frac{1}{3}$; the first number is $17\frac{1}{2}$, the second is $14\frac{1}{6}$, and the third $22\frac{3}{4}$. Find the fourth number.

12. Find the least common multiple of $18\frac{1}{2}$, $21\frac{3}{5}$, $27\frac{3}{10}$ and $28\frac{1}{6}$.

EXERCISE II.

1. Divide \$6200 among A, B and C, so that four-fifths of A's money will be equal to eight-ninths of B's, and one-third of B's equal to one-fourth of C's.

2. A grocer sold $94\frac{1}{3}$ pounds of coffee, at the rate of 11 pounds for 14s. 8d., and by so doing gained 15s. $8\frac{2}{3}$d. What was the cost price of the coffee per pound?

3. By what number must 66 miles, 6 furlongs, 32 perches, be divided to give for a quotient 2 miles, 3 furlongs, 3 perches, 4 yards, 2 feet, 30 inches?

4. What will $\frac{19}{16}$ of a vessel cost, if $\frac{5}{11}$ of it be worth \$8973$\frac{1}{2}$?

5. If 12 men or 18 boys can do a piece of work in 58 days, in how many days can 7 men and 4 boys do a piece of work three times as great?

6. Find the value of a field $\frac{3}{16}$ of a mile long, and 48 rods wide, at $\frac{1}{11}$ of a cent per square foot?

7. There are two numbers in the proportion of 14 to 37, and the smaller number is 294; what is the larger?

8. Simplify $\dfrac{9\frac{1}{3}+4\frac{2}{5}-\frac{3}{7}\text{ of }1\frac{5}{9}}{16\frac{1}{4}-11\frac{1}{3}+\frac{3}{8}\text{ of }3\frac{1}{5}} \times 91\frac{3}{4}$.

9. A and B can do a piece of work in 12 days; A can do $1\frac{1}{2}$ times as much as B in the same time. In what time can each by himself do the work?

10. The cost of carpeting a room 28 feet long, with carpet 30 inches wide, and costing $1.25 a yard, is $84; what is the width of the room?

11. If $\frac{4}{7}$ of John's age is equal to $\frac{3}{5}$ of Henry's age, and John is $45\frac{1}{2}$ years of age, how old is Henry?

12. Find the value of a pile of wood 116 feet long, $6\frac{1}{2}$ feet high and 4 feet wide, at $\$3\frac{1}{3}$ per cord.

EXERCISE III.

1. Divide $2520 among A, B and C, so that B may get $680 more than two-thirds of C's share, and A twice as much as the other two, lacking $240.

2. A merchant bought 444 yards of cloth, at 59 cents per yard, and in selling it at 72 cents per yard, gave 37 inches for every yard. How much did he gain?

3. Find the value of a field 15 chains long, and 10 chains, 25 links wide, at $48 per acre.

4. By what number must ·0548 be multiplied to give a product of ·00092612?

5. A stick of timber is 36 feet long, 18 inches wide and 16 inches thick. How far from the end must it be cut to get one cubic yard?

6. After paying an income tax of 9d. in the £, a person has £372 12s. $11\frac{1}{2}$d. left. What was his income tax?

7. Reduce 18432 drams, avoirdupois, to pounds, Troy.

8. A can do a piece of work in 5 days, B can do four times as much in 21 days, and C eight times as much in 35 days. In what time can they together do a piece of work seven times as great?

9. Among how many persons can 3306 acres, 22 perches, 22 square yards, 3 square feet, 72 square inches, be divided, so as to give each person 48 acres, 2 roods, 19 perches, 4 square yards, 7 square feet?

10. The value of a pile of wood 96 feet long and four feet wide, at \$3.75 per cord, is \$95.62½. How high is the pile?

11. What will it cost to build a wall 160 feet long, 8 feet high and 2 feet thick, each brick being 8 inches long, 4 inches wide and 2 inches thick, if bricks be worth \$5.75 per thousand?

12. A field is 64 rods long, and contains 19⅓ acres. How many times must a boy walk around it in order to travel 31 miles, 1 furlong, 1980 feet?

EXERCISE IV.

1. The sum of the numerator and denominator of a certain fraction is 473, and the numerator is $\frac{4}{7}$ of the denominator. What is the fraction?

2. A man who owns $\frac{5}{16}$ of a vessel, sells .56̇ of his share; the part he has left is worth £420 7s. 9d. Find the value of his share of the vessel.

3. The product of four consecutive numbers is 14295960. Find the numbers.

4. A creditor receives 11s. 4d. for every pound that was due him, and thereby loses £283 16s. 8d. What was due to him?

5. A can do a piece of work in 12 days, which B can do in 15 days; with the help of a boy they finish the work in 5 days. In how many days could the boy do the work?

6. What is the value of a silver salver weighing 2 lbs., 8 oz., 14 dwts., 21 grs., at 3s. 4d. per dwt?

7. Find the cost of papering a room 24 feet long, 15 feet wide and 10 feet high, with paper 2 feet 2 inches wide, worth 18 cents per yard.

8. A can correct 210 pages for the press in $4\frac{1}{2}$ hours, and B can correct 450 pages in $6\frac{3}{4}$ hours. In what time can they together correct 1275 pages?

9. Divide £91 11s. 6d. into an equal number of guineas, sovereigns, crowns, half-crowns and shillings.

10. The fore wheel of a carriage is 11 feet, 8 inches in circumference, and the hind one 15 feet, 9 inches; how many more revolutions will the fore wheel make than the hind one, in going 5 miles, 7 fur., 40 per., 880 yds., 2640 feet?

11. Divide 315 peaches among three boys, so that the first may receive 9 as often as the second receives 12, and the third 21 as often as the second receives 18.

12. If 21 men do $\frac{5}{12}$ of a piece of work in 35 days, in how many days can 14 men finish the work?

EXERCISE V.

1. Divide \$2320 among A, B and C, so that B may have \$280 less than A, and \$120 more than C.

2. Twenty-nine times the G. C. M. of four numbers is 5539, and $\frac{7}{17}$ of their L. C. M. is 514745. What are the numbers?

3. Sixteen thousand one hundred and twenty-eight bricks are required for a wall 12 feet high, and 1 ft. 6 inches thick. If each brick is 9 inches long, 4 inches wide, and 3 inches thick, find the length of the wall.

4. Multiply 18 miles, 3 fur., 4 yards, 2 feet, 7 inches by 59.

5. One tenth of the difference between two numbers is 144, and one-tenth of their sum is less than their difference by 1224. Find the numbers.

6. What fraction is 3 quarters, 12 lbs., 12 oz., of 18 cwt., 16 lbs. ?

7. Find the value of 27 horses at £18 6s. 8d. each. Give answer in dollars and cents, the shilling being worth 24⅓ cents.

8. If a cubic foot of water weighs 1000 ounces, how many tons are there in a pond which covers 1½ acres, the water being 4½ feet deep ?

9. John does $\frac{1}{11}$ of a piece of work in 33 days. He then calls in James, and they finish the work in 9 days. In what time could James do the whole work by himself ?

10. A grocer buys 19cwt., 3qrs., 15lbs. of sugar at 5 d. per pound ; how much does he gain or lose by selling it for £2 14s. 2d. per cwt.?

11. A room is 24 feet long, 16 feet wide and 9½ feet high ; what will it cost to paint the four walls at 18 cents per square yard ?

12. Forty-nine sheep and 36 pigs cost £159, 11s. 4d. A sheep costs 13s. 8d. more than a pig. Find the cost of seven pigs.

EXERCISE VI.

1. From 169 acres, 1 rood, 12 sq. yds., 1 sq. ft., 64 sq. in. take 126 acres, 2 roods, 23 perches, 19 sq. yds., 5 sq. feet, 87 sq. inches.

4. The fore-wheel of a carriage is 8 feet in circumference, and makes 810 more revolutions than the hind wheel in going 4½ miles. Find the circumference of the hind wheel.

3. A man walked 94 miles, 5 fur., 6 perches, in 3 days; the first day he walked 24 miles, 2 fur., 7 per., 3 yards, the second day 15192 yards further than the first. How far did he walk the third day?

4. A can cut $1\frac{1}{4}$ cords of wood in $\frac{5}{6}$ of a day; B can cut as much in $\frac{1}{3}$ of a day as A can in $\frac{1}{2}$ of a day. How long will it take them to cut 30 cords of wood when they work together?

5. C and D working together can do a work in $10\frac{1}{2}$ days. They work together for $3\frac{1}{2}$ days, when C leaves, and D finishes the work in 28 days more. In how many days conld each do the work separately?

6. How many times does the product of $9\frac{3}{5}$ and $11\frac{1}{1\frac{1}{2}}$ contain the difference between $18\frac{5}{1\frac{5}{6}}$ and $11\frac{3}{4}$?

7. Divide £12 4s. between A and B, so that $\frac{5}{6}$ of A's money will be equal to $1\frac{9}{1\frac{5}{6}}$ times B's money.

8. If 4 men earn £7 18s. 8d. in 7 days, how many men will earn £24 18s. 8d. in 8 days?

9. A field is 48 rods, 33 yards, $49\frac{1}{2}$ feet long, and 37 rods, $16\frac{1}{2}$ feet, 396 inches wide; find the number of acres in it.

10. How many seconds are there in $\frac{1}{7}\frac{1}{3}$ of a year $+\frac{7}{5\frac{7}{6}}$ of a week $+\frac{9}{1\frac{9}{0}}$ of an hour?

11. If $\frac{6}{1\frac{6}{1}}$ of a farm be worth £169 7s. 6d. find the value of $\frac{3}{5}$ of the farm.

12. In what time can 18 men do the same work which 8 men and 24 boys can do in 36 days, if 7 men can do as much work as 12 boys?

EXERCISE VII.

1. Divide \$52.20 among 7 men, 9 women, and 13 boys, so that each woman may receive $\frac{4}{7}$ of each man's share, and each boy $\frac{7}{8}$ of each woman's share. What does each boy receive?

2. The cost of carpeting a room 20 feet long, by 18 feet wide, with carpet worth \$1.26 per yard is \$60.48; what is the width of the carpet?

3. C can do a piece of work in 36 days, B in 20 days, and A, B, and C, in 10 days. In what time can A alone do the work?

4. A grain buyer purchased 11964 pounds of barley at 64 cents per bushel, and sold it at \$1.50 per cental. Find his gain.

5. Find the value of

$$\frac{3\frac{3}{4}-1\frac{1}{2} \text{ of } \frac{5}{12}}{8\frac{1}{3} \text{ of } \frac{6\frac{1}{5}}{62}} \div 1\tfrac{9}{24} \text{ of } \tfrac{4}{5}\tfrac{}{7}.$$

6. A can do a piece of work in $9\frac{1}{2}$ days of 8 hours each, A and B together can do the work in $6\frac{1}{3}$ days of 9 hours each. In how many days of $9\frac{1}{2}$ hours each can B alone do the work?

7. A certain sum of money was left to be divided among 27 poor people; after a tax of 4d. in the £ had been paid, each person received £3 3s. 11d. What was the sum?

8. A field is $1\frac{2}{5}$ of a league long, and $\frac{9}{80}$ of a mile wide; how many square feet are there in the field?

9. A farmer had 38 cwt. 2 qrs. 2 lbs. of pork; he kept 4 cwt. 3 qrs. 11 lbs. for his own use and sold the remainder in barrels, each containing 1 cwt. 3 qrs. 23 lbs. How many barrels of pork did he sell?

10. A garden is 12 rods long and 10 rods wide; what will it cost to make a path 4 feet wide around it on the outside, at 1s. $1\frac{1}{2}$d. per square yard?

11. Divide \$3798 among A, B, and C, in the proportion of .9 .83, .61.

12. By what number must $427\frac{7}{11}$ be increased so that the sum will exactly contain $19\frac{2}{3}$?

EXERCISE VIII.

1. How many rails will be required to fence a field $982\frac{1}{3}\frac{6}{3}$ rods long and $3297\frac{2}{3}$ yards wide, if the fence be straight, 8 rails high and the rails the longest that can be used?

2. A sum of money is divided among A, B, and C; A receives \$20 less than $\frac{2}{5}$ of the sum, B, \$80 more than $\frac{1}{3}$ of the sum, and C \$30 less than $\frac{1}{4}$ of the sum. What sum of money was divided?

3. A man sold a farm for \$4320, losing $\frac{1}{6}$ of the cost price, and $\frac{1}{7}$ of the selling price. Find the cost price of the farm.

4. Find the largest number that will divide 2235, 3231, and 4615, leaving as remainder 68, 79 and 84 respectively.

5. What will it cost to sow a field 48 rods long, and 176 yards wide, with wheat worth $2\frac{2}{11}$ cents per pound, if $\frac{2}{3}$ of an ounce be sown on every 6 square feet?

6. Three-fourths of the length of a bridge is 55 yards less than $\frac{3}{5}$ of the length of it. It takes a man $3\frac{3}{4}$ minutes to walk across it; what is his rate of walking in miles per hour?

7. What part of a furlong represents the same distance as $1\frac{1}{2}$ of an inch?

8. What must be the height of a room 28 feet long, and 24 feet wide that the area of the walls may be $109\frac{1}{9}$ square yards?

9. Find the value of

$$\left(\frac{\frac{5}{8}-\frac{1}{3}}{\frac{6}{7}}-\frac{1}{2}+\frac{2}{3\frac{3}{5}}-\frac{\frac{3}{4}}{1\frac{2}{7}}+8\right) \text{ of } \$336.$$

10. The cost of an equal number of bushels of oats, barley, and wheat is \$229.96. The oats cost $38\frac{1}{4}$ cts. per bushel, the barley $73\frac{2}{3}$ cts., and the wheat $\$1.27\frac{5}{8}$. How many tons of grain are there?

11. What must be given per yard for carpet 2 feet 8 inches wide that the carpeting of a room 21 feet long by 16 feet wide, may cost \$53.76?

12. What is the least number that must be added to 760139 so that the sum will exactly contain 91, 156, and 208?

EXERCISE IX.

1. A merchant mixes 45 gallons of wine at \$2.25 per gallon with 18 gallons at \$3.60 per gallon. How many gallons of water must he add to the mixture, so as to gain \$17.07 by selling it at \$2.18 per gallon?

2. A certain sum of money is divided among 4 persons; the first receives $\frac{5}{19}$ of the whole, the the second $\frac{3}{7}$ of the remainder, and the third four times as much as the fourth. The first receives £13 more than the fourth. How much money did each receive?

3. The G. C. M. of two numbers is 8609, and their L. C. M. is 3805178; one of the numbers is 292706. Find the other number.

4. Find the total cost of

5463 lbs. of hay at $11 per ton.
693 lbs. of oats at 42½ cts. per bushel.
247 lbs. of beef at $5½ per cwt.
720 cubic feet of wood at $3.60 per cord.

5. Find the quotient of ·0071685 divided by ·09672 to six decimal places.

6. If it costs $56 to carpet a room 18 feet long and 16 feet wide; what will it cost to carpet a room 21 feet long and fifteen feet wide with carpet worth 41 cents a yard more?

7. A boy walked 16 times around a field 48 rods wide, and found that he had gone 9 miles 6 furl. 20 rods 1408 yds. 990 feet. How many acres were there in the field, and what was the value of the field at £8 14s. 9d. per acre?

8. If nine men or 12 boys can do $\frac{7}{16}$ of a piece of work in 21 days, in what time will 12 men and 20 boys finish the work?

9. A certain number is divided by $1\frac{1}{6}$, the quotient is then multiplied by $\frac{3}{8}$; 36 is taken from the product, and the remainder is divided by $6\frac{3}{7}$, giving 28 for a quotient. What is the number?

10. Find the value of 480 times the difference between $\frac{2}{3}\frac{7}{5}$ of a guinea and $\frac{1}{4}\frac{1}{3}\frac{1}{2}\frac{1}{0}$ of a crown. Give answer in pounds, shillings and pence.

11. Express 12cwt. 3qrs. 14lbs. as the decimal of $2\frac{1}{16}$ tons.

12. If 7 tons 8cwt. 2qrs. 24lbs. of iron be sold for $1041.18, and the gain be $\frac{1}{6}$ of the cost, what was the cost of the iron per ton?

EXERCISE X.

1. Divide \$1230 between A and B so that ·6875 of A's money will be equal to ·59375 of B's money.

2. On a railway 18 miles, 1336½ feet long, there are 650 telegraph posts, including those at the two ends of the road. What is the average distance between the posts. Answer in rods.

3. Fourteen-nineteenths of a certain number is equal to the sum of the quotient, product, difference and sum of 16½ and 3⅔; what is the number?

4. To what depth will 660 cords of gravel cover a road 3 miles long and 8 feet wide?

5. Nine turkeys and 4 hens are worth \$8.40, and 7 turkeys and 9 hens are worth \$8.30. Find the value of 2 turkeys and 8 hens.

6. By selling tea at 81 cents per pound, a merchant gains $\frac{1}{8}$ of the cost, at what price per pound must he sell it to gain $\frac{5\frac{1}{4}}{25\frac{1}{5}}$ of the cost?

7. A can do 14 times a piece of work in 4 days, B can do the work in 4 days, and C in $\frac{6}{11}$ of a day. In what time can they together do the work?

8. A train 165 yards long, running at the rate of 40 miles an hour, overtakes a man walking along the line, and passes him in 9 seconds. How many miles per hour was the man walking?

9. A and B run a mile race; A runs 44 yards while B runs 43. How many yards' start must A give B, so that he may win the race by 16 yards?

10. A miller mixed oats at 36 cents per bushel with pease at 64 cents per bushel, in the proportion of 3 bushels of oats to one bushel of pease, and sells the mixture at the rate of 56 cents per bushel. What part of his outlay does he gain?

11. What fraction of $5\frac{1}{2}$ of $\frac{1}{2}\frac{7}{2}$ of $\frac{2}{3\frac{2}{5}}$ of 3 quarts of wheat is $3\frac{1}{7}$ oz. of the same grain?

12. A park is 16 rods wide, and contains 4 acres. What will it cost to make a gravel walk around it, on the inside, at 54 cents per square yard?

Walk 4 ft wide

EXERCISE XI.

1. Find the difference in grains between 9 oz., avoirdupois, and 9 oz. Troy.

2. A sold goods to B, losing $\frac{1}{2\frac{1}{5}}$ of the cost; B sold them to C for $912, gaining $\frac{3}{1\frac{1}{6}}$ of what they cost him. How much did A pay for the goods?

3. The L. C. M. of 12, 14, 18, 21, 27 and another number prime to them, is 30996. Find the number.

4. Find the difference between $\frac{2}{1\frac{1}{9}}$ of $1\frac{2}{5}$ tons, and $\frac{1}{1\frac{1}{6}}$ of 456 drams. Express the answer in pounds.

5. Windsor is 110 miles west of London, and Chatham is 46 miles nearer to London than Windsor is. A train starts from Windsor for London and goes 20 miles per hour, and at the same time another train starts from London for Windsor and goes 24 miles per hour. How many miles east or west of Chatham will they meet?

6. The cost of carpeting a room 20 feet wide was $\$63.44\frac{4}{5}$; but if the length had been 4 feet less than it was, the cost would have been $\$54.38\frac{2}{5}$. What was the length of the room?

7. Reduce $8\frac{1}{4}$ miles $-17\frac{7}{8}$ rods to the fraction of $56\frac{1}{8}$ furlongs $+4\frac{1}{2}$ yards.

8. A man has \$256, and spends a part of it; he afterwards receives 4 times as much money as he spent, and then had \$463. How much money did he spend?

9. Reduce $\frac{7}{1\frac{1}{2}}$ of 19s. 8d. to the decimal of $\frac{9}{1\frac{1}{6}}$ of £2 16s. $4\frac{1}{2}$d. Give answer to four decimal places.

10. An equal number of guineas, pounds, crowns, florins, sovereigns, half-crowns, half-guineas, shillings, half-sovereigns and fourpences make up £272 7s. 8d. Find the number of each.

11. Find the value of the wheat on 16 acres, 3 roods, 24 perches, at £4 19s. 8d. per acre.

12. A grocer mixes 18 lbs. of tea, at 2s. 8d. per pound, with 14 lbs., at 3s. 9d. per pound. At what price per pound must he sell the mixture, so as to gain $1\frac{5}{1\frac{1}{6}}$d. on each pound?

EXERCISE XII.

1. What is the smallest number that must be taken from 471659326, so that the remainder will exactly contain 51, 85, 119 and 221?

2. If $\frac{3}{4}$ of $\frac{9}{1\frac{1}{7}}$ of an estate be worth \$2430, find the value of $\frac{2}{3}$ of the remainder of the estate.

3. A farmer raised in 4 years 3320 bushels of wheat, raising each successive year 180 bushels more than the year before; how many bushels did he raise the first year?

4. Twenty-seven times the product of four numbers is $9\frac{1}{6}$; the first number is $1\frac{1}{12}$, the second is $\frac{1}{3}\frac{3}{5}$ less than the first, and the third is $\frac{1}{6}\frac{3}{3}$ greater than the second. What is the fourth number?

5. A snail, in getting up a pole 48 feet high, climbed up 13 feet during 12 hours in the day, but slipped back 6 feet during 12 hours in the night; how many hours would he be in getting to the top?

6. How often can $\frac{8}{11}$ of a rod + $\frac{2}{3}$ of a yard + $1\frac{1}{2}$ of a foot, be taken from 2 miles, 5 furlongs, 31 rods, 2 yards, 2 feet, 2 inches?

7. What must be taken from £32 3s. 6d. to have $\frac{5}{12}$ of it left? Give answer in dollars and cents, the shilling being reckoned at $24\frac{1}{3}$ cents.

8. A can cut 2 cords of wood in $8\frac{1}{3}$ hours, B can cut $\frac{1}{3}$ of a cord in $2\frac{1}{2}$ hours, and C can cut 3 cords in $18\frac{1}{3}$ hours. How many cords can they together cut in $16\frac{1}{2}$ hours?

9. Divide \$2951 among 19 boys and 14 girls, giving each girl $\frac{4}{5}$ as much as each boy; what sum will each receive?

10. What must be the breadth of a piece of land whose length is $41\frac{1}{2}$ rods, in order that it may be three times as great as another piece of land whose length is $29\frac{1}{2}$ rods, and whose breadth is $18\frac{1}{4}$ rods?

11. What will be the cost of 26 cwt., 2 qrs., $12\frac{1}{2}$ lbs. of beef, if 8 cwt. cost \$68?

12. After giving away \$40 more than $\frac{5}{12}$ of my money, I find that I have \$180 more than $\frac{1}{3}$ of it left. How much money had I at first?

EXERCISE XIII.

1. A man gave $\frac{9}{14}$ of his money to A, $\frac{3}{8}$ of the remainder to B, $\frac{2}{5}$ of what was then left to C, $\frac{1}{3}$ of what then remained to D, and divided the remainder equally between E and F. E received \$76; how much money had he at first?

2. Find a fraction equal to $\frac{1}{3}\frac{9}{2}$, whose numerator is $\frac{3}{5}$.

3. If one steamer sail 2400 miles in 16 days, how far will another sail in 9 days, if she can sail 6 miles while the former one sails 5 miles?

4. How long would it take a man to walk 7 times around a field 64 rods long, containing $12\frac{4}{5}$ acres, if he walk at the rate of $3\frac{1}{2}$ miles per hour?

5. At what price must I mark goods which cost me $11.20, so that after throwing off $\frac{1}{4}$ of the marked price, I may gain $\frac{1}{5}$ of the cost price?

6. Divide 635 into three parts, so that 4 times the first will be equal to 7 times the second, and also equal to 9 times the third.

7. A man agreed to work for 8 shillings a day, and to forfeit 3s. 4d. for every day he was idle; at the end of 84 days he received £26 16s. How many days did he work?

8. A man, his wife, and five children earn $55.08 in 12 days; the man earns $1\frac{1}{3}$ times as much as his wife, and the wife $1\frac{1}{2}$ times as much as each child. How much does each earn per day?

9. Paid $\$1.86\frac{1}{2}$ for $26\frac{3}{4}$ square yards of land; how much was that per acre?

10. Divide $875 among A, B and C, so that B may receive $60 more than $\frac{3}{5}$ of A's share, and C $90 more than $\frac{3}{4}$ of B's share.

11. In walking 1 mile, 5 furlongs, 12 rods, 4 yards, 2 feet, A took 3768 steps, and B took 3942 steps in walking 2 miles, 1 furlong, 16 rods, 4 yards, 1 foot. Find the difference in the length of their steps.

12. Find the amount of the following bill in dollars and cents, the shilling being worth $24\frac{1}{3}$ cents:

16 yds. of silk at 12s. 8d. per yard.
9 yds. of black broadcloth at £1 1s. 6d. per yd.
28 lbs. of tea at 3s. $2\frac{1}{2}$d. per pound.
26 yds. of muslin at 2s. $5\frac{1}{3}$d. per yd.

EXERCISE XIV.

1. What part of 2 tons. 2 cwt., 2 qrs., 2 lbs., is 14 lbs., 14 oz., 14 drs.?

2. Find the cost of 5 bush., 3 pecks, 1 gal., 2 qts., 1 pt., of clover seed, at $\$5.91\frac{1}{2}$ for $3\frac{1}{4}$ pecks.

3. A block of marble 12 feet long, $7\frac{1}{2}$ feet broad, and 1ft. 4in. thick, weighs $19\frac{1}{3}$ tons. Find the weight of 48 cubic inches of the marble.

4. A person bought 24 gallons of brandy at $\$3.20$ per gallon; how many gallons of water must he add, so as to reduce the price to 70 cents per quart?

5. If a boy buys pears at the rate of 7 for 4 cents, and sells them at the rate of 3 for 2 cents, how many must he buy and sell to make a profit of $\$1.10$?

6. Find three fractions whose numerators shall be 9, 11 and 13 respectively, and whose sum shall be equal to 2.

7. Simplify $\dfrac{4-\dfrac{2}{4-\frac{1}{2}}}{8-\dfrac{4}{8-\frac{1}{4}}} \div \dfrac{18\frac{1}{4}-\frac{7}{8}}{19\frac{2}{3}+1\frac{5}{12}}$ of $2\frac{4}{13}\frac{1}{6}$.

8. A farmer sold 58 bushels of barley and 87 bushels of oats for $84.68, receiving 26 cents a bushel more for the barley than for the oats; what was the price of each per bushel?

9. Sold goods for $5.60, and gained $\frac{1}{7}$ of the cost price. What part of the cost price, and also what part of the selling price would be gained by selling them for $6.37?

10. A boy engages with a farmer for $108 a year and a watch, but leaving at the end of 9 months, receives $75 and the watch. What was the watch worth?

11. After 78 times the sum of 64 equal numbers has been divided by $1\frac{3}{7}$, the result is 2330496. Find one of the numbers.

12. What will it cost to fence a road (both sides) 2 miles, 240 rods long, at the rate of $89\frac{3}{9}$ cents for 11 yards? Give the answer in £ s. d., the shilling being worth $24\frac{1}{3}$ cents.

EXERCISE XV.

1. Divide $1952 among three persons, so that the share of the first to that of the second shall be as 11 to 15, and the share of the second to that of the third as 3 to 7.

2. The cost of carpeting a room 19ft. 6in. long, and 16ft. 3in. wide, with carpet 2ft. 2in. wide, is $72.15. What was the cost of the carpet per yard?

3. Find the smallest sum of money with which I can purchase oxen at $57\frac{3}{7}$ each, cows at $41\frac{1}{3}$ each, sheep at $10\frac{2}{7}$ each, or hogs at $8\frac{3}{5}$ each, and how many of each kind, respectively, I could purchase with that sum.

4. When rails are worth \$18.75 per thousand, what will be the cost of fencing a field 852 feet long and 768 feet wide, if the fence be straight, 7 rails high, and the rails the longest that can be used?

5. What part of $7\frac{1}{2}$ cords of wood is a pile 12ft. 6in. long, 5ft. 4in. high, and 27 inches wide?

6. From the sum of 9·243, ·0694 and 37·23, take ·87693, multiply the difference by 5·09, and divide the product by ·0025.

7. A pond of $3\frac{1}{2}$ acres is covered with ice 8 inches thick. Find the weight of the ice in tons, if a cubic foot of ice weigh 880oz., avoirdupois.

8. A man had $\frac{1}{16}$ of a mine; he sold $\frac{9}{27}$ of his share, and divided the remainder between his two sons, giving $\frac{9}{13}$ of it to the elder. The younger son's share is worth \$4800; what was the value of the whole mine?

9. Nine horses are worth 15 oxen, and 14 oxen are worth 21 cows, and 13 cows are worth 65 sheep, and 19 sheep cost \$182.40; how many horses, oxen, cows and sheep, an equal number of each, can be bought for \$5740.80?

10. After 32 has been taken eleven times from a certain number, $\frac{1}{2}$ of $\frac{9}{14}$ of the remainder is 423; what is $\frac{7}{12}$ of the number?

11. Twenty-one times the distance around a square field is 66528 feet; find the number of acres in the field.

12. A, B and C perform a piece of work in 8 hours, A and B in 10 hours, A and C in 24 hours; in how many hours can B and C do thirteen times the work?

EXERCISE XVI.

1. Divide \$2176 among 20 men, 24 women and 28 children, in such a way that a man and a woman shall together receive as much as 5 children, and all the children shall together receive \$448; find the amount received by each man, woman and child, respectively.

2. A can do $\frac{4}{9}$ of a piece of work in 16 hours, B $\frac{3}{5}$ of the remainder in 18 hours, and C can finish it in 840 minutes; in how many hours can they together do a work 4 times as great?

3. The fore wheel of a waggon is 9ft. 2in. in circumference, and makes 1092 revolutions more than the hind wheel in going 7 miles. How many revolutions will the hind wheel make in going $2\frac{1}{2}$ miles?

4. Express 9 guineas, 12 shillings, $7\frac{1}{3}$ pence as the fraction of eleven times £3 12s. $5\frac{1}{4}$d.

5. Find the simple interest on \$1260 for $4\frac{1}{2}$ years at 7 per cent. per annum.

6. A sum of money was divided among A, B and C; A received $\frac{5}{12}$ of the sum, B received \$80 more than $\frac{3}{7}$ of what was left; the remainder, which was $\frac{2}{3}$ of A's share, was given to C. Find the sum of money divided.

7. If a stone which is 15 feet long, 6 feet wide and 5ft. 6in. thick, weighs 14300 pounds, what will one of the same kind weigh that is 18ft. long, 7ft. 6in. wide, and 6ft. 3in. thick. Give answer in tons.

8. A, B and C can do a work in $3\frac{9}{13}$ days, A B and D in 4 days, A, C and D in $4\frac{4}{11}$ days, B, C and D in $5\frac{1}{3}$ days. In how many days could each by himself do the work?

9. A pile of wood is $7\frac{1}{2}$ feet high, 12 feet wide, and 320 feet long; what part of it must be taken for 72 cords?

10. A person sold a farm for \$6390, losing 10 per cent. of the cost; for how much should he have sold it to have gained 5 per cent. of the cost?

11. At the rate of $45\frac{3}{8}$ yards for £30 5s., how many yards of cloth can be bought for £86 4s. $5\frac{1}{3}$d.?

12. Simplify $648\frac{2}{3}+416\frac{1}{12}-\frac{1}{19}$ of $26\frac{3}{5}+\frac{\frac{47}{84}}{3\frac{11}{12}}$.

EXERCISE XVII.

1. A horse cost \$210, and $\frac{5}{6}$ of the cost of the horse is $\frac{5}{8}$ of $1\frac{3}{4}$ times the cost of a carriage; how much more did the horse cost than the carriage?

2. I bought 28 reams of paper at 14 cents a quire, and sold it for \$96.60; what fraction of the cost was my gain?

3. The sum of £12 7s. 6d. is divided among 4 persons in the proportion of $2\frac{1}{3}$, $1\frac{7}{8}$, $1\frac{3}{4}$, and $\frac{11}{12}$. What is the share of each?

4. Posts are placed 7ft. 6in. apart around a field 45 rods long, containing $11\frac{1}{4}$ acres; find the cost of the posts required, at \$87.50 per thousand.

5. The interest on a certain sum of money for $3\frac{1}{2}$ years at 6 per cent. per annum is \$302.40; what is the sum?

6. By selling oranges at 80c a dozen $\frac{5}{11}$ of their cost was gained. Find the price at which each orange should have been sold to gain $\frac{1}{5}$ of their cost.

7. The cost of papering a room whose height is 9ft. 6in. and length $1\frac{1}{2}$ times its width with paper 30 inches wide costing 16 cents per yard is \$24.32; find the cost of carpeting the floor with carpet 27 inches wide at 90 cents per yard.

8. At an entrance examination there were 9 candidates at the age of 11, 14 at the age of 12, 17 at the age of 14, 21 at the age of 16, and seven at the age of 17. Find the average age of the candidates.

9. A sold a farm to B, gaining 5 per cent.; B sold it to C for \$5600, gaining $11\frac{1}{9}$ per cent. What did the farm cost A?

10. A can do a piece of work in 9 hrs., B in 8 hrs., an C in 6 hrs. They all work together for $\frac{3}{4}$ of an hour, when A leaves; how long will it take B and C to finish the work?

11. Reduce 2147693 sq. inches to ac., roods, &c.

12. Find the value of

$$\frac{8\frac{1}{4}-1\frac{1}{12}}{9\frac{1}{3}+\frac{3}{8}} \times \frac{1}{2}\frac{6}{2}\frac{3}{8}\frac{1}{8} \text{ of } £7\ 12\text{s. } 9\text{d.}$$

EXERCISE XVIII.

1 If 7 men receive \$47.88 for $4\frac{1}{2}$ days' work, how many men may be hired for $8\frac{1}{4}$ days for 163.02?

2. A garden is $10\frac{2}{3}$ rods long and $9\frac{1}{3}$ rods wide. At $48\frac{3}{4}$ cents per cubic yard what will it cost to dig a ditch around it that shall be 4 feet wide and $3\frac{1}{2}$ feet deep? (Ditch to be on the outside.)

3. A person after paying an income tax of 3d. in the pound, and another of 6 per cent. on his income, has left £1961. Find his income.

4. A grocer has 260 lbs. of tea, of which he sells 35 pounds at 84 cents per pound, and gains $\frac{1}{11}$ of the cost price. He then raises the price so as to gain $\frac{1}{7}$ of the whole outlay. What is the price per pound when raised?

5. How many minutes must a boy, who runs 5 miles an hour, start before another boy who runs 6 miles an hour, in order that they may be together at the end of 4 miles?

6. Three men and 4 boys earn \$28.80 in 4 days, and 5 men and 2 boys earn \$25.50 in 3 days; in how many days will 7 men and 7 boys earn \$406.35?

7. If \$17.62$\frac{1}{2}$ pay for $\frac{1}{3}$ of $9\frac{3}{5}$ of $1\frac{2}{7}$ cords of wood, how many cords can be bought for \$126.87$\frac{1}{2}$?

8. A man walking at the rate of $3\frac{1}{2}$ miles per hour, performs a journey in $8\frac{1}{4}$ days of $9\frac{1}{3}$ hrs. each. At what rate per hour must he walk in order to perform the same journey in $6\frac{3}{4}$ days of 11 hrs each?

9. A does $\frac{4}{11}$ of a piece of work in 12 days; he then gets B to help him, and they finish the work in 15 days. In how many days could B do the whole work by himself?

10. The diameter of the hind wheel of a carriage is $1\frac{1}{2}$ times that of the fore wheel. After travelling $\frac{7}{8}$ of a mile it is found that the hind wheel has made 385 revolutions. Find the diameter of the fore wheel and the number of revolutions it will make in going $2\frac{1}{2}$ miles. (Circumference equals $3\frac{1}{7}$ times the diameter.)

11. $4\frac{1}{2}$ times the sum of two numbers is $4\frac{5}{16}$ and $29\frac{1}{3}$ times, their difference is $6\frac{1}{3}$; what are the numbers?

12. A merchant bought 148 yards of cloth at the rate of 17 yards for \$20.40, and sold it at the rate of 49 yards for \$75.95. Find his gain per cent.

EXERCISE XIX.

1. How often does 4 times the sum of $24\frac{2}{3}$ and $19\frac{7}{8}$ contain three times their difference?

2. The numerator of a certain fraction is two-sevenths as much again as its denominator, and the sum of its numerator and denominator is 448. What is the fraction?

3. What fraction of $\frac{2}{3}$ of £9 6s. 8d. is $\frac{4}{9}$ of £2 16s. 4d.?

4. A horse and carriage together cost $\$221\frac{3}{20}$, the horse and harness $\$156\frac{1}{2}\frac{6}{3}$, the carriages and harnes $\$128\frac{99}{100}$. Find the cost of each.

5. Divide \$3780 among A, B, C, and D so that C may get \$40 less than twice as much as D, B \$90 more than one-half as much as C and D together, and A \$140 more than one-third as much as the other three together. Find the share of each.

6. The product of four consecutive numbers is 5527200. What are the numbers.

7. If a cubic foot of water weighs 1000 ounces how many tons are there in an iceberg 480 feet long 99 feet broad and 48 feet high. (Water expands one-tenth in freezing.)

8. The sum of three numbers is $59\frac{4}{5}\frac{3}{7}\frac{3}{8}$; and 15 times the first, 16 times the second, and 18 times the third give equal products. Find the numbers.

9. How many times must 6 tons 3cwt. 2qrs. 19lbs. 14oz. be added to itself to produce 228 tons 16cwt. 3qrs. 10lbs. 96drs.?

10. If 32 plots of ground, each containing 24 sq. per. 22 sq. yds. $4\frac{1}{2}$ sq. feet be taken out of a field 64 rods long and $11\frac{1}{4}$ chains wide, how many sq. yards will be left?

11. A piece of work can be done in 57 days by 64 men; after working at it for 19 days 16 of the men leave the work. In how many days could the remaining men finish the work?

12. A train 45 rods long, running at the rate of 32 miles an hour, takes 36 seconds to cross a bridge; find the length of the bridge.

EXERCISE XX.

1. The cost of a certain number of pounds of tea at 3s. $4\frac{1}{4}$d. per pound, and 4 times as many lbs. of coffee at 1s. $3\frac{1}{2}$d. per pound is £5 10s. $9\frac{1}{4}$d. Find the number of pounds of each.

2. If 4 men or 6 boys can do $\frac{2}{3}$ of a piece of work in $9\frac{1}{3}$ days of 12 hours each, in how many days of 9 hours each can 6 men and 7 boys finish the work?

3. If 12 bars of iron each 4 feet long, 3 inches wide, and 2 inches thick weigh 576 pounds, how much will 24 bars weigh, each being 6 feet 6 inches long, 4 inches wide, and three inches thick?

4. Fourteen masons can build a certain wall in $10\frac{5}{16}$ days of $9\frac{3}{5}$ hrs. each; in now many days of 11 hours each could 6 masons build a wall $3\frac{1}{3}$ times as long

5. A farm is 252 rods long and 180 rods wide; if it is divided into square fields of the largest size possible, how many fields will there be, and how many square yards wil there be in each field?

6. A merchant failing in business finds that he has \$4200, and that he owes \$6720. How much should a person receive whose claim is \$1300?

7. What is the simple interest on \$1680 for $3\frac{3}{4}$ years, at $8\frac{4}{5}$ per cent.?

8. Find the value of

$$\frac{5\frac{1}{4}-3\frac{3}{5}}{9\frac{1}{2}+2\frac{2}{3}} \div \frac{\frac{1}{4}-\frac{1}{5}}{\frac{1}{5}-\frac{1}{6}} \text{ of } \frac{5\frac{4}{9} \div 7}{\frac{1}{2\frac{1}{2}}+\frac{1}{3\frac{1}{3}}} \text{ of \$5110.}$$

9. If 5 men and 6 women earn £13 5s. in a week, and 6 men and 7 women earn £15 14s. 3d. in the same time, in how many weeks will 7 men and 8 women earn £199 18s. 6d.?

10. A bin 12 feet long, 7 feet wide and $6\frac{1}{2}$ feet high, will hold how many bushels of grain? 1 bushel = $2218\frac{1}{5}$ cubic inches nearly).

11. Divide the sum of $9\frac{1}{2}$ and $\frac{7}{8}$ by their difference, and also their difference by their sum, and find the difference of the two quotients.

12. If 18 men mow 240 acres of grass in 8 days, how many men must be employed to mow $337\frac{1}{2}$ acres in $4\frac{1}{2}$ days?

EXERCISE XXI.

1. I sold $428\frac{1}{4}$ bushels of barley at 68 cents per bushel, and bought an equal weight of oats at 42 cents per bushel. How much money had I left?

2. A man, after paying a tax of $1\frac{1}{4}$ cents on every dollar of his income, and also spending \$9.25 per week, is able to save \$467 a year; what is his income?

3. Multiply the difference between 28 tons and 13tons, 16cwt., 2qrs., 19lbs., 11oz., by $84\frac{1}{2}$.

4. Simplify $9645+6\cdot32\times\cdot0096\div\cdot048$. Give answer in decimals.

5. A man divided a farm among his three sons; to the first he gave $\frac{1}{2}\frac{1}{5}$ as much as to the second and third together, to the second $\frac{3}{5}$ of the whole, and to the third 60 acres. Find the number of acres in the farm.

6. A watch and chain cost £28 1s 7d; the watch cost $4\frac{3}{4}$ times as much as the chain. Find the cost of each.

7. John can beat James by 4 yards in a 100-yard race, and James can beat Charles by 15 yards in a 300-yard race. By how many yards can John beat Charles in a 250-yard race?

8. A does $\frac{1}{3}$ of a piece of work in 22 days; he then gets B to help him, and they finish the work in 5 days. If \$48 be paid for the whole work, how much does each earn per day?

9. A tea merchant buys tea at 51 cents per pound, and sells it so as to gain $\frac{2}{3}$ of $1\frac{1}{14}$ of the $\frac{\frac{9}{10}\times 7\frac{1}{3}}{4\frac{2}{5}}$ cost price; how much money will he receive for 28 chests, each containing 63 pounds?

10. Find the largest number that will divide 1437, 2338, 2605 and 4046, leaving as remainders 29, 34, 45 and 78 respectively.

11. A farmer sold a horse for \$168, gaining $16\frac{2}{3}$ per cent.; what per cent. would he have lost had he sold him for \$128?

12. How many pounds, ounces and drachms, Avoirdupois weight are there in 4lbs., 4ozs., 10dwts., Troy?

EXERCISE XXII.

1. A can do $\frac{8}{2\frac{4}{5}}$ of a piece of work in 8hrs., and B can do $\frac{4}{2\frac{4}{5}}$ of the same work in 6hrs.; if A works at it alone for 4hrs, how long will it take A and B working together to finish it?

2. What number is that from which if you take the difference between $\frac{4}{5}$ and $\frac{2}{3}$, and add to the remainder the quotient of $4\frac{1}{2}$ by $2\frac{1}{3}$, the sum will be $10\frac{1}{3}+\frac{4}{5}$?

3. A bankrupt owes £2465 12s. 7½d., and pays 13s., 8d. in the pound. Find the total value of his property.

4. A man sold a horse for £42 gaining $\frac{1}{8}$ of the purchase money. What part of the purchase money would he have gained had he sold the horse for £48 13s. 4d.?

5. A owns $\frac{5}{1\frac{1}{6}}$ of a farm and B the remainder, and the difference between their shares is 65 acres, 4 per. Find the value of the farm if $\frac{1}{4}$ of it be worth $45 an acre., and the remainder $50 an acre?

6. Find the least number from which 7, 8, 10, 12, 14, 15, 21 and 45 can be taken an exact number of times.

7. A and B received £6 18s. for digging a ditch; they worked together for $8\frac{1}{4}$ days, and then A left and B finished the work in $6\frac{1}{2}$ days. How should the money be divided?

8. What fraction of 3 guineas + 3 sovereigns + 3 crowns + 3 shillings + 3 pence is £5 5s. 5d.?

9. What is the simple interest on £840 13s. 4d., for 4 years at 6 per cent?

10. How many minutes are there in $\frac{1}{7}\frac{5}{3}$ of a year (365 days), + $\frac{3}{1}\frac{}{4}$ of a week + $\frac{7}{8}$ of a day + $\frac{4}{2}\frac{}{5}$ of an hour?

11. How long will a boy take to walk around a field $\frac{1}{3}$ of a mile long, and $\frac{3}{1}\frac{}{6}$ of a mile wide, if he takes 12 steps of 2 feet 3 inches each in one-fourth of a minute?

12. Simplify—

$$\frac{4\frac{4}{9} \div 1\frac{1}{4}}{2\frac{1}{5} \text{ of } \frac{4}{1}\frac{}{1} \div 2\frac{2}{3}} \times \frac{3}{8} \text{ of } \frac{4\frac{1}{3} \text{ of } \frac{3}{2}\frac{}{6}}{14\frac{1}{7} \times 1\frac{1}{3}\frac{4}{3}}$$

EXERCISE XXIII.

1. A drover bought a certain number of sheep for $960; fifteen of them died; he sold $\frac{2}{3}$ of the remainder for $735 which was $175 more than they cost. How many sheep did he buy?

2. If 4 horses or 6 cows eat 7 tons of hay in 91 days, in how many days will 2 horses and 9 cows eat 16 tons of hay?

3. A, B and C can do nine times a piece of work in 72 days. A can do $\frac{1}{3}$ of the work in 6 days, B $\frac{3}{4}$ of the work in $22\frac{1}{2}$ days. In what time can C alone do the work?

4. A person walked 19 times around a field 48 rods long, and found that he had gone 7miles, 7fur., 30per., 1375yds., 3960 feet. How many acres were there in the field?

5. A man gave $\frac{2}{17}$ of his money to A, $\frac{3}{11}$ of the remainder to B, $\frac{7}{8}$ of what was then left to C. With the remainder he purchased a town lot 8 rods long and $1\frac{1}{2}$ chains wide, at $7\frac{1}{2}$ cents per square yard. How much money had he at first?

6. The simple interest on \$760 for a certain number of years at $6\frac{1}{2}$ per cent. is \$247.00. Find the number of years.

7. Two blocks of marble, each 8 feet long, contain an equal number of cubic feet; the first is $2\frac{1}{4}$ feet wide and $1\frac{1}{2}$ feet thick, and the second is $1\frac{1}{3}$ feet thick; what is the width of the second block?

8. Find, in dollars and cents, what must be taken from £28 17s. $4\frac{1}{2}$d., to have $\frac{7}{9}$ of it left, the shilling being worth $24\frac{1}{3}$ cents.

9. If 2 men, 3 women, 6 boys of 12 girls can do a piece of work in 52 days, how many days will it take 1 man, 1 woman, 1 boy and 1 girl to do a work one-third as great?

10. How often does three times the sum of $17\frac{3}{4}$ and $9\frac{7}{8}$ contain $\frac{3}{11}$ of their difference?

11. Three horses are worth 5 oxen, and 7 oxen are worth 12 cows, and 6 cows are worth 21 sheep, and 11 sheep are worth 48 lambs, and 19 lambs are worth \$52.25; how many horses can be bought for \$1560?

12. Divide \$920 between A and B, so that $\frac{3}{4}$ of A's money will be equal to $\frac{9}{11}$ of B's.

EXERCISE XXIV.

1. Reduce 2016000 grains, Troy, to pounds, avoirdupois.

2. A can mow $1\frac{7}{8}$ acres in $1\frac{1}{2}$ days, B $3\frac{1}{3}$ acres in $2\frac{1}{2}$ days, and C $6\frac{1}{2}$ acres in $4\frac{1}{3}$ days. In how many days can they together mow $24\frac{1}{2}$ acres?

3. Bought a certain number of horses at \$140 each, three times as many oxen at \$56 each, and twice as many cows as oxen at \$32 each, paying for all of them \$4000. How many of each did I buy?

4. How many minutes will it take a boy to walk around a square field, each side of which is 4fur., 32per., if he walk at the rate of $3\frac{3}{4}$ miles per hour?

5. A man working 10 hours a day can perform a piece of work in 21 days; how many hours a day must he work in order to perform a piece of work four times as large in 72 days?

6. From the end of a pile of wood 96 feet long, 8 feet high and 4 feet wide $5\frac{5}{8}$ cords are taken. Find the length of the remainder.

7. A person, after paying an income tax of $4\frac{1}{2}$ mills in the dollar, has \$3982 left. What was his gross income?

8. Reduce $\frac{11}{16}$ to an equivalent fraction, having $\frac{1}{4}$ for a numerator?

9. By what must $342\frac{3}{5}$ be increased to make it exactly divisible by $21\frac{3}{4}$?

10. Simplify

$$\left\{ 3\tfrac{1}{2}\tfrac{9}{4} - \tfrac{3}{4} \text{ of } \frac{18\frac{1}{3} - \frac{4}{5}}{16\frac{4}{3} \div 3\frac{1}{2}} \right\} \div \left\{ 8\tfrac{1}{4} \div \frac{19\frac{1}{3}}{7\frac{1}{4} \times 1\frac{1}{4\frac{1}{3}}} \right\}$$

11. A man sold two lots for \$624 each; on the one he gained 4 per cent. of the cost, and on the other he lost 4 per cent. of the cost. Find his gain or loss on the sale of the two lots.

12. There is a number which, when multiplied by $3\frac{1}{2}$, and the product diminished by 600, and the difference divided by $5\frac{1}{5}$, and this result increased by 280, and the sum divided by $14\frac{5}{6}$ gives $\frac{4}{9}$ of 270 for a quotient. What is $\frac{9}{10}$ of the number?

EXERCISE XXV.

1. The expense of carpeting a room is \$24, but if it were six feet wider it would cost \$32; what is the width of the room?

2. Find a fraction equal to $\frac{17\frac{1}{4}}{13\frac{1}{2}}$ whose numerator is $33\frac{3}{4}$ greater than its denominator.

3. A man sold a farm for $\$6634\frac{9}{17}$, gaining $\$645\frac{3}{8}$ and $\frac{2}{9}$ of the cost. What was the cost of the farm?

4. By selling tea at 84 cents per pound a grocer gained $9\frac{1}{11}$ per cent on his outlay; at what price per pound must he sell it to gain 20 per cent. of his outlay.

5. If a number be increased by $\frac{2}{7}$ of itself, and this number increased by $\frac{3}{5}$ of itself, the result is 864. Find the number.

6. Simplify—

$$\left\{ (4\tfrac{2}{5}+\tfrac{2}{3}) \text{ of } \frac{42}{16\frac{1}{3}} \text{ of } \frac{9\frac{1}{5}}{7\frac{2}{3}} \right\} \div 14\tfrac{1}{3}.$$

7. A wagon-maker manufactured in 4 years 456 wagons, making each successive year 16 more than the year before; how many wagons did he manufacture the first year?

8. Find the difference in the price of a field $\frac{3}{20}$ of a mile long and 10 chains wide, at £44 5s. $6\frac{2}{3}$d. per acre, and at 7s. $8\frac{1}{2}$d. per square rod.

9. What is the difference between 35 times 23 miles, 7fur., 18per., 5yds., 1ft., 6in., and 17 times the same number of miles, fur., etc.?

10. How much greater is the sum of the two largest of the following than the product of the two smallest: $\frac{23}{24}$, $\frac{7}{9}$, $\frac{5}{8}$, $\frac{17}{21}$, $\frac{11}{15}$?

11. The product of two numbers is 2.9529264, and thirteen times one of the numbers is .4602; what is the other number?

12. By what number must £3380 15s. $11\frac{1}{8}$d., be divided to give $49\frac{1}{2}$ for a quotient?

EXERCISE XXVI.

1. A dealer in horses gave £2146 14s. 6d. for a certain number of horses, and sold a number of them for £806 11s. 3d., at £27 16s. 3d. each, and by so doing gained £3 2s. 9d. a head; for how much a head must he sell the remainder to gain £494 11s. 5d. on the whole?

2. In walking a certain distance A takes 19768 steps; how many steps will B take in walking $\frac{19}{24}$ of the distance, if 7 steps of A's are equal to 6 of B's.?

3. If 8 yards of silk cost as much as 18 yards of tweed, and if 19 yards of silk and 47 yards of tweed together cost $86.16, find the price per yard of each article.

4. What are the prime factors of 33090330?

5. Bought $43.20 worth of potatoes at 48 cents per bushel; I kept part of them for my own use and sold the remainder at a gain of 25 per cent for $35.40. How many bushels did I keep?

6. Find the G. C. M. of £58 16s. 6d. £78 19s. 6d., and £88 8s., and express the answer as the fraction of a pound.

7. A person paid £756 for horses, cows and sheep, spending an equal sum for each kind; each horse cost £28, each cow £9 6s. 8d., and each sheep £2 6s. 8d. How many of each kind did he buy?

8. Eleven loads of wheat weigh 21 tons, 4cwt., 24lbs.; four of them weigh 2 tons, 1cwt., 3qrs., 19lbs. each. Find the average weight of the others.

9. In quick marching soldiers take 112 steps of 32 inches each in a minute; how long will it take them to march $21\frac{1}{3}$ miles?

10. Four men and seven boys working together can do a piece of work in 32 days; in how many days can 16 men do the work, if the work of three men be equal to that of 5 boys?

11. The cost of carpeting a room 21 feet 4 inches long and 16 feet 8 inches wide, with carpet costing $\$1.37\frac{1}{2}$ per yard, is $\$61.11\frac{1}{9}$; what is the width of the carpet?

12. What number multiplied by $\frac{8\frac{1}{4}}{16\frac{1}{3}}$ will give $12\frac{2}{7}$ for a product?

EXERCISE XXVII.

1. A grocer gained $\$3.90\frac{1}{2}$ by selling $28\frac{3}{4}$lbs. of tea at the rate of 7lbs. for $\$4.77\frac{3}{4}$; find the cost price per pound.

2. It costs \$33.60 to paper the walls of a room 18 feet square, with paper 27 inches wide, at 30 cents a yard. Find the height of the room.

3. Two city lots in Toronto are sold for \$1260 each; on the one there was a gain of $\frac{3}{7}$ of the cost, and on the other there was a loss of $\frac{3}{7}$ of the cost. Find the gain or loss on the sale of the two lots.

4. The least common multiple of 8, 12, 18, 28, 42, and another number prime to them is 29736. What is the number?

5. Find the cost of 7 tons, 18cwt., 2qrs., 19lbs. of hay, if 4 tons $18\frac{7}{10}$ cwt. cost \$39.49$\frac{3}{5}$.

6. A merchant expended \$240 in the purchase of calico, at the rate of \$3$\frac{3}{16}$ for 17 yards; how much will he gain by selling it at the rate of 28 yards for \$6.74$\frac{1}{3}$?

7. Simplify

$$\frac{\text{29 miles, 7fur., 11per., 5yds., 1ft.}}{7} \times \frac{\text{£23 0s.10}\frac{3}{4}\text{d.}}{\text{£2 17s. 7}\frac{1}{3}\text{d.}}$$

8. What weight of gold coin is equal in weight to 3cwt., 90lbs., 384oz. of copper coin?

9. A boy rides a certain distance and walks back in 8hrs., 35min.; he could walk both ways in 10hrs., 40min. How long would it take him to ride both ways?

10. What sum of money will amount to \$1500 80 in 4 years at $8\frac{1}{2}$ per cent. per annum?

11. The height of a room is $3\frac{2}{3}$ yards; the cost of painting the two shorter walls at 24 cents per square foot is \$105.60, and the cost of painting the four walls is \$253.44. Find the length and breadth of the room.

12. Find the difference between 11 miles and 10 miles, 7fur., 39per., 5yds., 2ft., 3in.

EXERCISE XXVIII.

1. A thief has 48 miles the start of a detective, but the detective goes 9 miles while the thief goes $7\frac{1}{2}$ miles; how far will the detective have travelled before he overtakes the thief?

2. Find the average of the following: 45, 28−17, 13−67, 82, 39−47, 0−19, 31.

3. Divide £840 among A, B and C, so that A may have $2\frac{1}{2}$ times as much as B, and C as much as A and B together.

4. How many times will all the four wheels of a waggon turn round in going 13 miles, 7fur., 199per., $5\frac{1}{2}$yds., 2640ft., the hind wheels being each 11ft. 3in. in circumference, and the fore wheels 8ft. 4in.?

5. A, B and C can do a certain piece of work in 12 days; how long will it take each to do it separately, if A does $1\frac{1}{3}$ times as much as B, and B does $\frac{3}{5}$ as much as C?

6. A has 1368 sheep, and $\frac{4}{7}$ of his number is equal to $\frac{4}{6}\frac{8}{7}$ of B's; find the value of B's sheep at \$189 for 14 sheep.

7. If 8 men mow 48 acres in 3 days of 9 hours each, in how many days working $13\frac{1}{2}$ hours a day will 9 men mow 108 acres?

8. Two sums of money are divided among A B and C., the first sum equally, and the second in the proportion of 2, 3 and 7; B receives \$70.49 and C \$126.61. Find the sums divided.

9. The sum of three numbers is 360 and 63 times the first, 18 times the second, and 14 times the third are all equal; find the numbers.

10. Find the simple interest on \$2240 for $3\frac{1}{2}$ years at 6 per cent.

11. What is the smallest number that must be added to $317\frac{2}{3}$ to make it exactly contain $19\frac{1}{3}$?

12. Reduce $\frac{4\frac{1}{3}}{9\frac{1}{8}}$ to an equivalent fraction having its numerator 115 less than its denominator.

EXERCISE XXIX.

1. The product of four fractions is $\frac{3}{16}$; the first fraction is $\frac{3}{8}$, the second is $\frac{6}{16}\frac{5}{8}$ greater than the first, and the second is $\frac{1}{6}\frac{1}{3}$ less than the third. Find the fourth fraction.

2. A cubic foot of water weighs 1000 ounces avoirdupois; find the weight of a vessel of water containing $569\frac{1}{3}$ cubic inches.

3. A man can paint 14 square yards in $3\frac{1}{2}$ hours; in 42 hours 30 ninutes he paints both sides of a wall $7\frac{1}{2}$ feet high. Find the length of the wall.

4. If $\frac{5}{17}$ of $6\frac{1}{3}$ of $\frac{7}{24}$ of a mass of metal weigh $53\frac{5}{11}$ pounds, find the weight of $\frac{2}{3}$ of $\frac{3}{5}$ of the remainder.

5. A certain sum of money amounts to \$1504 in $3\frac{1}{2}$ years at simple interest, and the same sum amounts to \$1632 in $5\frac{1}{2}$ years at simple interest. Find the sum.

6. A field is 1056 feet wide, and contains 48 acres; if a boy walk around it 16 times how many miles will he travel?

7. At what price must I mark cloth which cost me \$3.20 per yard so that after throwing off $\frac{1}{6}$ of the marked price I may still have a profit of $\frac{1}{6}$ of the cost price?

8. The freight and duty on 1680 gallons was \$140; the frieght was $\frac{1}{6}$ of the duty. Find the freight on 63 gallons.

9. Find two numbers whose sum is 246 which are in the proportion of $\frac{7}{1\frac{1}{2}}$ to $\frac{5}{\frac{1}{2}}$.

10. The numerator of a complex fraction is 9; when the fraction is divided by $2\frac{1}{4}$ the result is $8\frac{1}{4}$; find the denominator of the fraction.

11. The L. C. M. of two numbers is 13464 and their G. C. M. is 68; one of the numbers is 748: what is the other number?

12. A farmer mixed together 47 bushels of barley, 85 bushels of peas, and 96 bushels of oats. He sold 95 bushels of the mixture, how many bushels of barley did it contain?

EXERCISE XXX.

1. A dealer bought 12 car loads of lumber, each containing 10840 feet at \$15.60 per thousand. He sold it at \$1.78 per hundred feet. Find his gain.

2. The cost of papering a room whose length is $1\frac{1}{5}$ times its width, with paper 2 feet 4 inches wide, worth 24 cents per yard, is \$47.52; find the cost of carpeting the floor with carpet 2 feet 6 inches wide, the carpet costing 56 cents a yard.

3. What is the simple interest on \$2240 for 3 years at $4\frac{1}{2}$ per cent?

4. Coffee is three times the price of sugar and tea is $7\frac{1}{2}$ times the price of sugar. How many pounds of tea will 65 pounds of coffee buy.

5. Seven cows and 9 sheep are worth \$332.80 and 5 cows and 13 sheep are worth \$300.80; how many cows and sheep, an equal number of each, can be bought for \$806.40?

6. A farmer bought a certain number of sheep for \$230.40; seven of them died; he sold $\frac{3}{5}$ of the remainder for \$141.75 which was \$33.75 more than cost. How many sheep did he buy?

7. A book is $3\frac{1}{2}$ inches thick. Each cover is $\frac{3}{16}$ of an inch thick, and the book contains 904 pages. What is the thickness of each leaf?

8. It costs \$79.18$\frac{3}{4}$ to cover with oil-cloth a hall 54·3 feet long. The oil cloth costs \$1.57$\frac{1}{2}$ per square yard. Find the width of the hall.

9. The product of 3 numbers is 37719, the first and second are to each other as $\frac{1}{3}$ to $\frac{1}{4}\frac{1}{3}$, and the third number is $42\frac{1}{3}$. Find the first and second numbers.

10. A cistern is 6ft. 4in. by 4ft. 6in.; how deep must it be to contain 304 cubic feet of water?

11. Divide \$622 among A, B, C and D, giving A \$1.50 as often as B gets 90 cents, B 65 cents as often as C gets 52 cents, and D \$18 less than C.

12. Find the amount of the following bill:—

184 pounds of butter at $18\frac{1}{4}$ cents per pound,
$97\frac{1}{3}$ pounds of cheese at $9\frac{3}{4}$ cents per pound,
$280\frac{1}{4}$ pounds of lard at $11\frac{1}{3}$ cents per pound,
$\frac{9}{1}$ yard of velvet at \$6.48 per yard,
] yards of tweed at \$1.52 per yard.

EXERCISE XXXI.

1. A and B together can do a piece of work in 12 days; A and C in 16 days; B and C in 18 days. In what time could C alone do the work?

2. A grocer mixes 40 pounds of tea at 60 cents per pound with 65 pounds at 72 cents per pound; at what price per pound must he sell the mixture to gain 25 per cent. of the cost?

3. A reservoir is 61ft. 6in. long by 48ft. 4in. wide; how many tons of water must be drawn off to make the surface sink 8 inches.

4. Find the cost of 24yds., 2qrs., 3 nails of cloth when 4·2 yards cost $6·048.

5. A bar of gold weighing 25lbs. Troy is worth £1168 2s. 6d. What is the weight of a sovereign in grains?

6. A room is 28 feet long and 20 feet wide; what must be the height in order that the area of the floor and ceiling together may be equal to the area of the walls?

7. Divide $640 among A, B, C and D, giving C $200 more than $\frac{2}{3}$ of D's share, B $400 more than $\frac{4}{5}$ of C's share, and A $280 more than $\frac{3}{5}$ of B's share.

8. A can run 22 yards while B can run 21 yards; what start ought A to give B in a half-mile race so as to win by 5 yards?

9. Three persons A, B and C gain $20800; A's gain and C's gain are together $13000, and $\frac{5}{14}$ of A's is equal to $\frac{1}{2}\frac{5}{3}$ of C's. Find each man's gain.

10. A man built a wall 45 feet long, 7½ feet high and 2 feet 8 inches thick with bricks 9⅓ inches long, 4 inches wide and 2½ inches thick. If the mortar fills up one-fifteenth how many bricks were needed?

11. A grocer, by selling tea at the rate of $6\frac{1}{2}$ lbs. for \$4.68, gains $12\frac{1}{2}$ per cent. If he sells it at the rate of $8\frac{1}{4}$lbs. for \$6.27, what per cent. will he gain?

12. Simplify

$$\frac{9\frac{1}{12}}{4\frac{1}{4}} \times \frac{9}{28} + \frac{7}{18} \text{ of } \frac{7\frac{2}{5}}{47\frac{4}{7}} \div \frac{56}{243}.$$

EXERCISE XXXII.

1. What is the least number that must be added to 87421593 to make it exactly contain 805, 1311 and 1978?

2. A and B can do a piece of work in $\frac{8}{33}$ of a day, A and C in $\frac{3}{20}$ of a day, and B and C in $\frac{24}{67}$ of a day. In what time could each by himself do the work?

3. A farmer divided his farm among his three sons; the first received 40 acres, the second $\frac{2}{9}$ of the whole, and the third twice as much as the other two. How many acres were in the farm?

4. A line of soldiers $\frac{1}{4}$ of a mile long, walking at the rate of $3\frac{3}{4}$ miles per hour, cross a bridge in 6 minutes. Find, in yards, the length of the bridge.

5. Three pipes, A, B and C, would fill a cistern in 45, 50 and 60 minutes respectively. All are opened together, but at the end of $7\frac{1}{2}$ minutes the first pipe is turned off, and at the end of 10 minutes the second pipe is turned off. In how many minutes will the cistern be filled?

6. A solid pile of bricks 32 feet long, 18 feet 6 inches wide, and 12 feet 3 inches high, contains 116032 bricks of the same size; each brick is $4\frac{1}{2}$ inches wide and 3 inches thick; find its length.

7. A person's income is reduced from £720 to £708 15s. by income tax. What is the tax in the pound?

8. The profits of a store for two years were $3108; the profits of the second year being $\frac{3}{3}\frac{9}{5}$ of those of the first; find the profits of each year.

9. A does $\frac{7}{17}$ of a work in 21 days; he then gets B to help him, and they together finish the work in 12 days. In how many days would each by himself do the work?

10. If $\frac{1}{5}$ of A's money be equal to $\frac{1}{6}$ of B's, and $\frac{3}{4}$ of B's be equal to $\frac{7}{8}$ of C's, and $\frac{2}{3}$ of C's be equal to $\frac{16}{21}$ of D's, and D has $90 less than C, how much money has each?

A teacher receives £228 4s. 6d. a year; his expenses equal $\frac{5}{13}$ of what he saves. Find the difference between his savings and his expenses.

12. Reduce $\frac{3}{1}\frac{3}{5}$ of a yard to the decimal of a mile.

EXERCISE XXXIII.

1. A man can row from A to B (a distance of 18 miles) and back in still water in 6 hours; how long will it take him to do the same when there is a current flowing from B to A at the rate of 2 miles an hour?

2. Reduce 12lbs., 4oz., 9dwt., 14grs. Troy, to the decimal of $\frac{1}{15}$ of a ton.

3. What is the length of the longest rope that will exactly measure both the distances 971 yards, 1ft., 9 inches and 1233 yards, 1ft. 9 inches?

4. £3982 9s. 3d. is $4\frac{1}{2}$ times the selling price of a farm of 64 acres, 2 rods, 20 perches; if the farm is sold for £189 18s. 9d. below cost, find the cost price of the land per acre.

5. Find the expense of papering a room 23 feet long, 19 feet wide and $9\frac{1}{2}$ feet high, with paper 27 inches wide worth 45 cents a yard, allowance being made for 2 doors each 6 feet by 3 feet, and 4 windows each $5\frac{1}{2}$ feet by 4 feet.

6. If $5\frac{1}{4}$ yards of cloth $\frac{2}{3}$ of a yard wide cost $\$5.14\frac{1}{2}$, what will be the cost of $48\frac{1}{3}$ yards $1\frac{2}{3}$ yards wide?

7. At what rate per cent. will \$1380 amount to \$1693.95 in $3\frac{1}{4}$ years?

8. A bankrupt pays 48 cents on the dollar; if his assets were \$936 more he could pay 60 cents in the dollar. Find the amount of his debts.

9. A farmer has a bin 9 feet long, five feet 4 inches wide, and 2 feet three inches deep, holding 99 bushels; how deep must he make another bin which is to be 12 feet long and 10 feet 6 inches wide, so that it will contain 462 bushels?

10. A person sold two farms for \$3780 each; for one he received 25 per cent less than the cost, and for the other 25 per cent. more than the cost. Find his gain or loss on the sale of the two lots.

11. Divide \$3875 among A, B, C and D in the proportion of $\frac{1}{3}$, $\frac{1}{5}$, $\frac{3}{10}$ and $\frac{5}{24}$.

12. Tom's age is $\frac{5}{6}$ of John's, and John's is $1\frac{1}{3}$ of Robert's, and Robert 16 years ago was 62; what are their respective ages?

EXERCISE XXXIV.

1. The greatest common measure of five numbers is 78 and their least common multiple is 4157010. What are the numbers?

2. Eight men can do a piece of work in 15 days; after they have done $\frac{1}{3}$ of the work, 12 men come to their assistance. How many days will it take all the men to finish the work?

3. The sum of \$159 is divided among four men, 6 women and 9 boys so that as often as a man gets \$2.25 a woman will get \$1.80, and as often as a woman gets \$2.70 a boy will get \$2.00. Find the sum received by a man, a woman and a boy respectively.

4. A sold a farm to B at a gain of 10 per cent. B sold it to C for \$5049, losing 15 per cent.; What did the farm cost A?

5. The sum of two numbers is 286 and $\frac{4}{11}$ of $6\frac{3}{5}$ of one number is equal to $5\frac{1}{7}$ times the other number; find the numbers.

6. Simplify—

$$\frac{18}{11+\cfrac{5}{7+\frac{1}{7}}} \div \frac{8}{1\,9\,5} \text{ of } \frac{7}{1\,2} \text{ of } \frac{8}{1\,7\,8} + \frac{9\frac{1}{3}}{12\frac{2}{3}}.$$

7. I bought 70 pounds of tea for \$42 and sold it so as to gain \$8.40; had I purchased \$120 worth of tea and sold it at the same rate, what profit would I have made?

8. A boiler is 3 feet 8 inches long, 2 feet 2 inches wide, and $8\frac{1}{2}$ inches deep; how many gallons will it hold if one-half pint contains $17\frac{1}{3}$ cubic inches?

9. How many bushels of grain must I take to mill so that I shall have 114 bushels left for grinding, after paying toll at the rate of $3\frac{1}{2}$ quarts to the bushel?

10. If 32 men can do a piece of work in 21 days, working 8 hours a day, how many hours a day must 42 boys work to perform the same work in 24 days., 2 boys being equal to 1 man?

11. A man cleared \$32.10 in 36 days, by earning \$1.20 each day he worked and spending 65 cents each day he was idle; how many days did he work?

12. A drover bought a certain number of sheep; 9 of them died, and he then sold at cost $\frac{2}{3}\frac{9}{7}$ of the remainder for \$696, which was \$264 less than the entire lot cost. How many did he buy?

EXERCISE XXXV.

1. A, B and C do a piece of work in a certain time; A and B together do $\frac{1}{1}\frac{0}{3}$ of it; B and C together do $\frac{7}{1}\frac{}{3}$; what part of the work can B alone do?

2. John and Robert have \$900 between them; $\frac{4}{5}$ of John's money is \$12 less than $\frac{5}{6}$ of Robert's. What sum has each?

3. Sold a cow for \$28 losing 20 per cent. bought another and sold it at a gain of $16\frac{2}{3}$ per cent.; I neither gained nor lost on the two. Find the cost of each cow.

4. I bought apples at the rate of 5 for 6 cents and sold them at the rate of 4 for 5 cents; I gained 38 cents on the whole number purchased. How many apples did I buy?

5. A vessel at sea has 165 persons on board and provisions sufficient to last 4 months; they take from a wreck 55 persons more. How long will their provisions last?

6. I spent \$126 for potatoes at 75 cents per bushel; after retaining a part for my own use I sold the remainder at 20 per cent. profit and cleared \$6.30 on the cost of the whole; how many bushels did I retain?

7. A can do a piece of work in 36 days, B in 48 days; after both work 4 days A leaves; when must he return, that the work may occupy 24 days?

8. A merchant sold tea at 72 cents per pound and lost 4 per cent. He afterwards sold a box of the same kind of tea for \$107.10 and gained 20 per cent. How many pounds of tea were there in the box?

9. A farmer sold 36 bushels of wheat and 49 bushels of oats for \$56.97, receiving 52 cents per bushel more for the wheat than for the oats. Find the price of each per bushel.

10. By selling an article for \$102.66, $2\frac{1}{2}$ per cent. is lost; what per cent. would be gained or lost by selling it for \$115.20?

11. A piece of ground 72 rods long and $48\frac{1}{3}$ rods wide costs \$1235.40; another piece at the same price per acre costs \$1853.10. If the latter piece is $43\frac{1}{2}$ rods wide, what is its length?

12. A person has \$264; he spends a part of it and afterwards gets back \$27 more than $4\frac{1}{4}$ times as much as he spent. He then has \$642; how much money did he spend at first?

ANSWERS.

EXERCISE I.

(1) 1491179. (2) 1704. (3) $930. (4) $452. (5) 1337. (6) 107624 pounds. (7) $912. (8) $1343. (9) 747538. (10) 19740 yards. (11) 647180. (12) 78707.

EXERCISE II.

(1) 5428907518. (2) 9; 7 times. (3) 6 years. (4) 262479. (5) 14909. (6) $2892. (7) 705754. (8) 304 feet. (9) 2658225. (10) $475. (11) 19924. (12) 160191.

EXERCISE III.

(1) 47933550980049408. (2) $4177.68. (3) 86686776576. (4) 105914970. (5) 6144 nails. (6) 2108421 letters. (7) $481440. (8) 187845682255. (9) 25491670941. (10) 776520240. (11) 5789535921. (12) 398412 days.

EXERCISE IV.

(1) $3150658\frac{5}{8}\frac{4}{7}\frac{2}{9}$. (2) 489675. (3) 685972. (4) 268936785. (5) 701509. (6) 5076812. (7) 609847. (8) 265. (9) $70148396\frac{8}{11}\frac{9}{9}$. (10) 597. (11) 47893. (12) $2051753469\frac{5}{13}\frac{}{2}$.

EXERCISE V.

(1) 18172506. (2) 10975. (3) 612709066. (4) 93. (5) 63258161. (6) 438. (7) 4592932500. (8) 50680. (9) 2699101. (10) $468. (11) 195. (12) 1071502.

EXERCISE VI.

(1) 28. (2) 230; 22. (3) 76 days. (4) 33359823. (5) 564 acres. (6) 876. (7) 153641565. (8) 51004851. (9) 289. (10) 14245. (11) 469. (12)—

EXERCISE VII.

(1) 8 years. (2) 121 horses. (3) 748. (4) $260. (5) 2608. (6) 437. (7) 7. (8) $1600. (9) 64742. (10) 3049501. (11) 142. (12) MDCCXCIV.

EXERCISE VIII.

(1) 1043. (2) 23. (3) 18479. (4) 82346. (5) 980. (6) 1234. (7) 1728122. (8) 639472033. (9) 99060958. (10) 170. (11) 66 oxen. (12) $815.81.

EXERCISE IX.

(1) 361983. (2) $891. (3) 17 times. (4) $1276. (5) 6179374881. (6) 85724. (7) 36265. (8) 963. (9) Ten million, nineteen thousand and seventy-six. (10) 4929587. (11) 6529. (12) $2883.

EXERCISE X.

(1) $2057. (2) 17 days. (3) 720 acres. (4) 6953. (5) $1080. (6) 246. (7) 1042 votes. (8) 396576. (9) 165. (10) 70 cows. (11) $1284866\frac{1}{4}\frac{6}{7}\frac{0}{8}$. (12) 9 days.

EXERCISE XI.

(1) 3849418048. (2) 19 miles. (3) 18. (4) $1207412. (5) 461. (6) $607. (7) 3072. (8) $1568. (9) Six millions, nine hundred and ninety thousand, four hundred and forty-five. (10) $32. (11) 709514. (12) CMXLVII., MDCCCLXXXIII.

EXERCISE XII.

(1) 456 horses. (2) 270. (3) 8706. (4) 68 men. (5) 527 bushels. (6) 1504 pounds. (7) $1897.87. (8) 94. (9) 576 pecks. (10) 477914. (11) $12960. (12) 3678.

EXERCISE XIII.

(1) 485586. (2) 4288872. (3) 76089. (4) 563059393. (5) 1159720. (6) $800. (7) 106. (8) 18 horses. (9) 387. (10) 200 bushels. (11) 417466. (12) 39225.

EXERCISE XIV.

(1) 39058354. (2) $1640. (3) $20769. (4) 69. (5) 375 acres. (6) $1536. (7) 934 acres. (8) 204723. (9) 8193244. (10) 58758084. (11) $32. (12) 16401.

EXERCISE XV.

(1) 1890. (2) $7864. (3) 1260 acres. (4) $17496. (5) $122.25. (6) 1152. (7) 47. (8) 76943. (9) 4863. (10) 862552. (11) $817. (12) 6442323986448.

EXERCISE XVI.

(1) 587. (2) $3140. (3) 370. (4) 84736. (5) 5749. (6) 585. (7) $19352. (8) 46091325115359. (9) 7428. (10) 486 barrels. (11) 9198. (12) 25923.

EXERCISE XVII.

(1) $7679924\frac{3}{4}\frac{9}{8}\frac{1}{9}\frac{5}{7}$. (2) 5837. (3) 1966982. (4) 57 cows. (5) $373. (6) 216. (7) 986294. (8) 75 bushels. (9) 561. (10) 5608. (11) 4678 acres. (12) 500 acres.

EXERCISE XVIII.

(1) 4836571630578. (2) 16632. (3) 213882849. (4) 7 times. (5) 56836880. (6) 5859749401, (7) 15394866. (8) 7989. (9) 1737923088. (10) 23 times. (11) $2217802\frac{1}{5}\frac{4}{3}\frac{9}{9}\frac{3}{7}$. (12) 304 men.

EXERCISE XIX.

(1) 120999. (2) 90 horses. (3) 496. (4) 6490 acres. (5) 8753624. (6) 5103. (7) $1 a bushel. 8) $137700. (9) $36278. (10) $6.48. (11) $313411296\frac{8}{8}\frac{5}{9}$. (12) 17 hats.

EXERCISE XX.

(1) 824979. (2) 186748. (3) $181.33. (4) $3023.04. (5) 35. (6) $35. (7) 747824. (8) 768. (9) 54954351. (10) $5370. (11) 1404. (12) 602896.

EXERCISE XXI.

(1) 36 times. (2) $4892. (3) 4942080 inches. (4) 756. (5) 49¼ pounds. (6) 2428440. (7) 62177$\frac{1}{3}\frac{9}{8}\frac{8}{7}$. (8) $1625.29. (9) 47. (10) 1746. (11) 1260536947$\frac{3}{6}\frac{4}{3}$. (12) $9324.

EXERCISE XXII.

1) 5137986689154. (2) 140 sheep. (3) 2208. (4) $19.44. (5) $1596. (6) 17978688. (7) 66461472. (8) 752. (9) 1008. (10) 9. (11) 259813. (12) 24252$\frac{3}{3}\frac{1}{7}\frac{1}{6}\frac{6}{8}$.

EXERCISE XXIII.

(1) 467222445. (2) 30. (3) 547638. (4) 12 loads. (5) 56 cents. (6) 153. (7) 24 months. (8) 156. (9) 379. (10) 32830. (11) 13 hours. (12) 47368.

EXERCISE XXIV.

(1) 43373697. (2) 4283. (3) 845 acres. (4) 28 men. (5) 21931384. (6) 83. (7) 9255. (8) 437. (9) 897. (10) $2688. (11) 6 times; sixty-six thousand and fifty-seven. (12) 133 cows.

EXERCISE XXV.

(1) 27689. (2) 150 bushels. (3) 19114436. (4) 6275. (5) 73962. (6) 21 of each. (7) 11 stacks. (8) 52 cents. (9) 2309856. (10) $48. (11) 32 masons. (12) 7551.

EXERCISE I.

(1) 85 times. (2) $7.68. (3) 84 horses. (4) 18247. (5) 87 cents. (6) $9. (7) 38938276589. (8) $3. (9) $40.32. (10) 39 times. (11) 69 cents. (12) 462.

EXERCISE II.

(1) 42. (2) 252 lbs. (3) $3050. (4) 9416. (5) 47. (6) 781. (7) 23 car-loads. (8) 73. (9) $2436. (10) 368 days. (11) 57722. (12) 4306 boxes.

EXERCISE III.

(1) 6480. (2) $62.72. (3) 9, 10, 11 and 12. (4) 475 acres. (5) 450 barrels. (6) 7694 and 1896. (7) 2213. (8) A, $4800; B, $1600; C, $800. (9) 13 cents. (10) 248. (11) 268. (12) $1152.

EXERCISE IV.

(1) 596. (2) 160 cows. (3) 6468 miles. (4) $24. (5) Elder, $714; younger, $566. (6) 689. (7) 397. (8) 9746583. (9) 945 and 769. (10) 2⅓ times. (11) 1152 bushels. (12) $1360.

EXERCISE V.

(1) 37623650. (2) 7700 times. (3) 6812406 sheep. (4) 186 bushels. (5) 13027. (6) 79895. (7) 145, 203, 319. (8) $2436. (9) 94. (10) 5 cents. (11) A, $840; B, $280; C, $70. (12) $171458\frac{2}{4}\frac{4}{6}\frac{9}{2}$.

EXERCISE VI.

(1) $135.45. (2) 60 days; 720 miles. (3) $5908. (4) $2. (5) 29 men. (6) 56. (7) 80023896. (8) 148. (9) 30 gallons. (10) 16 yards. (11) $794.70. (12) 72837009.

EXERCISE VII.

(1) $60\frac{3}{3}\frac{1}{2}$. (2) 126. (3) $75. (4) 6807. (5) $28.80. (6) A, $360; B, 288; C, $432; D, $360. (7) $210. (8) $3\frac{1}{2}\frac{8}{0}$ and $4\frac{1}{4}$. (9) A, $7.50; B, $5.64. (10) 45 days. (11) 180 sheep. (12) $7\frac{1}{1}\frac{4}{5}$.

EXERCISE VIII.

(1) $3315. (2) $16\frac{4}{5}$. (3) 55. (4) $\frac{2}{3}\frac{3}{0}\frac{1}{0}$. (5) $5412. (6) $\frac{60\frac{1}{2}}{104\frac{1}{2}}$. (7) 7589. (8) $642.72. (9) $1\frac{4}{5}\frac{0}{2}\frac{9}{5}\frac{9}{0}$. (10) 7 fields. (11) A, $560; B, $360. (12) 39288070881.

EXERCISE IX.

(1) $21\frac{1}{1}\frac{0}{2}\frac{3}{0}$. (2) $237.32. (3) 5297. (4) $410.13. (5) 2246. 6) $11520. (7) $3\frac{4}{3}\frac{5}{1}\frac{5}{2}$. (8) 2, 3, 7, 11, 19. (9) 16 days. (10) $504. (11) 24898. (12) $9.09.

EXERCISE X.

(1) 19656. (2) $7000. (3) 7824. (4) 96 bushels; 7 bins wheat, 11 bins barley, 17 bins oats. (5) 2448. (6) 836 bushels. (7) $810. (8) $100.80. (9) $7.20. (10) 26460. (11) 93745. (12) 27 boxes.

EXERCISE XI.

(1) 385. (2) 476. (3) 12. (4) $147\frac{3}{1}\frac{}{4}$ (5) 27 lbs. (6) $3666\frac{2}{3}$, (7) 96431 and 87593. (8) $4536. (9) $11\frac{1}{4}$ acres. (10) 39730. (11) $101\frac{1}{2}\frac{0}{4}$. (12) 3564.

EXERCISE XII.

(1) 10757436. (2) $3672. (3) 193. (4) $1767. (5) 640 acres. (6) A, $960; B, $1080; C, $1200. (7) 9765 and 8770. (8) $\frac{4}{2}\frac{7}{1}\frac{}{9}$. (9) $\frac{4}{9}$. (10) $720. (11) $156. (12) 523.

EXERCISE XIII.

(1) 1800 barrels. (2) $56. (3) 8 minutes. (4) 25 days. (5) 12 cents. (6) 129. (7) $2.64. (8) $\frac{4}{3}\frac{}{5}$, $\frac{6}{3}\frac{}{5}$, $\frac{1}{3}\frac{1}{5}$, $\frac{1}{3}\frac{4}{5}$. (9) $576. (10) 17. (11) $\frac{2}{7}$. (12) 702.

EXERCISE XIV.

(1) $64.75. (2) 5649. (3) $179.55. (4) $31.68. (5) 6666. (6) A, $546; B, $378. (7) 770. (8) 843 marbles. (9) 25 days. (10) 79. (11) 1181. (12) 8973.

EXERCISE XV.

(1) 33 cents. (2) 2365. (3) $144. (4) $1935. (5) 856. (6) G. C. M. 17; L. C. M. 1428. (7) 48 cents. (8) 36 horses. (9) $24\frac{1}{3}$. (10) 4. (11) 28 horses. (12) $258.24.

EXERCISE XVI.

(1) 496873. (2) $517. (3) 21, 22, 23 and 24. (4) $4680. (5) 376593. (6) 36 days. (7) $4500. (8) $8536\frac{5}{7}\frac{2}{7}$. (9) $48. (10) 66445. (11) $12672. (12) 235, 329, 517.

EXERCISE XVII.

(1) 60 sheep. (2) 92. (3) $3.25. (4) 17. (5) $135. (6) $48.58. (7) 10 barrels. (8) 36. (9) 41069. (10) $520. (11) 34920. (12) 40400478.

EXERCISE XVIII.

(1) 8250 yards. (2) 516 sheep. (3) 627 days. (4) 1435. (5) 60 years. (6) $6.37\frac{1}{2}$. (7) 40 cents. (8) 672 pounds. (9) 420. (10) $81. (11) 324. (12) 22606.

EXERCISE XIX.

(1) 15 hours. (2) $5576.85. (3) $166.25. (4) 3312 tons. (5) 1652. (6) $1\frac{3}{5}$. (7) $69\frac{9}{10}$. (8) $\frac{1}{3}$. (9) $2\frac{6}{11}$ days. (10) 221. (11) $4940. (12) 2, 3 7, 11, 13, 17.

EXERCISE XX.

(1) $1\frac{1}{2}$. (2) 48 days. (3) $700. (4) 9 years. (5) $5\frac{92}{173}$. (6) $819. (7) $41\frac{7}{15}$ and $32\frac{3}{15}$. (8) 42 bushels. (9) $352. (10) $1530. (11) $10920. (12) 413, 649, 767.

EXERCISE XXI.

(1) Increased by $\frac{1}{4}$. (2) $945 (3) $\frac{3}{6}\frac{6}{8}$. (4) 144 bales. (5) $480. (6) 37 horses. (7) $108\frac{0}{1}\frac{7}{2}\frac{7}{0}$ acres. (8) $19. (9) 96. (10) 277. (11) 87 bushels. (12) $2\frac{4}{1}\frac{3}{0}\frac{3}{8}$.

EXERCISE XXII.

(1) 145. (2) $26\frac{2}{3}$. (3) 769. (4) $13.25. (5) $189. (6) $17728. (7) $1120. (8) $6\frac{1}{3}\frac{1}{0}$. (9) $\frac{3}{8}\frac{2}{2}$ smaller. (10) $640. (11) 18 boxes. (12) 44.

EXERCISE XXIII.

(1) $15\frac{1}{1}\frac{1}{5}$. (2) $1750. (3) $1.11. (4) 1000 of each. (5) $30.75\frac{1}{5}$. (6) 280 lemons. (7) $900. (8) $63. (9) $4410. (10) 416 miles. (11) 2, 2, 2, 2, 2, 3, 3, 3, 3, 7, 7, 7. (12) $4204.80

EXERCISE XXIV.

(1) 144 bushels. (2) $10720. (3) 79. (4) $46.08. (5) $105.45. (6) 2223. (7) 252 gals. (8) 4000 yards. (9) $3.88. 10) $480000. (11) $\frac{2}{3}$ (12) 24 days. $1\frac{7}{1}$.

EXERCISE XXV.

(1) $243.30. (2) 1057, 1661, 1963, 2567. (3) 14856. (4) $1.78. (5) $3300, $2400. (6) 15 gallons. (7) 1461. (8) 45 boys. (9) $194.12½. (10) 88⅞. (11) $1031. (12) $21036.

EXERCISE XXVI.

(1) $9.48. (2) 2613. (3) $1\frac{1}{10}$. (4) $1260. (5) 721. (6) 72678397. (7) $3400. (8) 9035. (9) 40200. (10) 45 days. (11) $2550. (12) $5.85.

EXERCISE XXVII.

(1) $303.88, (2) 914. (3) $237.84. (4) Loses 2 cents. (5) 903 and 2193. (6) $274.92. (7) $75. (8) $152. (9) 76513. (10) $10738. (11) 47 lbs. of each. (12) $397.44.

EXERCISE XXVIII.

(1) 609, 957 and 1131. (2) $67299. (3) 697. (4) $96.80. (5) 398. (6) 840. (7) $21120. (8) 131, (9) $65. (10) 13 years. (11) 1040 sheep. (12) $225.

EXERCISE XXIX.

(1) 625. (2) 74 cents. (3) $\frac{2}{3}$ of a day. (4) 68907. (5) 87 cows. (6) 47. (7) 58 days. (8) 2465 acres. (9) 360 cows. (10) $705.50. (11) 63 days. (12) 192 pounds.

EXERCISE XXX.

(1) $4. (2) 124 barrels. (3) 128 sheep. (4) $552. (5) 210 bushels of each. (6) $156.49. (7) 229320. (8) 130. (9) $4.75. (10) $\frac{1}{4}\frac{9}{3}\frac{2}{2}$, $\frac{3}{4}\frac{9}{3}\frac{6}{2}$, $\frac{3}{4}\frac{5}{3}\frac{1}{2}$, $\frac{3}{4}\frac{0}{3}\frac{6}{2}$. (11) 56083. (12) 2, 7, 17, 29, 31.

EXERCISE XXXI.

(1) 13440. (2) 5120 acres; $11 per acre. (3) 847791. (4) $32. (5) 40205232. (6) $771.84. (7) $\frac{2}{5}\frac{9}{6}$. (8) $58. (9) 27 horses. (10) 58 bushels. (11) $303. (12) $57\frac{1}{4}\frac{1}{4}$.

EXERCISE XXXII.

(1) 189. (2) $31. (3) $7913734\frac{6}{1}\frac{3}{0}\frac{8}{0}\frac{}{1}$. (4) 102 women. (5) 34741 steps. (6) 1036, 1628, 2516. (7) 228 bushels; 3 bins of wheat, 5 bins of barley, 7 bins of oats. (8) $6840. (9) $17\frac{1}{3}\frac{1}{0}$. (10) $\frac{1}{5}\frac{7}{7}$, $\frac{1}{5}\frac{8}{7}$, $\frac{2}{5}\frac{2}{7}$. (11) $39. (12) 96 cents.

EXERCISE XXXIII.

(1) 7621983. (2) 8 years (3) 294, 1274, 4018. (4) $1\frac{3}{4}\frac{0}{3}\frac{5}{2}$ (5) $800.28. (6) $7020. (7) 12. (8) 13 of each. (9) 97253. (10) 61⅓ bushels. (11) 240 acres. (12) 165.

EXERCISE XXXIV.

(1) 594. (2) $3.12. (3) 9467. (4) 98 horses. (5) 257385843. (6) 165. (7) 14 gallons. (8) $234\frac{67}{120}$. (9) $267 gain. (10) $1.35. (11) 80 horses. (12) A $192, B $320, C $448.

EXERCISE XXXV.

(1) 13 bushels. (2) 2128 rails. (3) $78.45. (4) $3540 gain. (5) $69.24. (6) $440. (7) $14877. (8) 135530593. (9) $203.84. (10) $\frac{360}{420}$, $\frac{360}{405}$, $\frac{360}{390}$, $\frac{360}{500}$, $\frac{360}{444}$. (11) 195. (12) $25.60.

EXERCISE I.

[1] 56 boys. [2] $\frac{2}{13}$ of a day. [3] $1.98. [4] A $5000, B $4800. [5] $\frac{67}{150}$, $\frac{17}{150}$. [6] 140 gallons. [7] 18 cents. [8] $51\frac{30}{120}$.

——— [9] 135 bushels of each. [10] $118.80. [11] $30\frac{11}{12}$. [12] $69\frac{7}{30}$.
17745.

EXERCISE II.

[1] A $2000, B $1800, C $2400. [2] 1s. 2d. [3] 28. [4] $8658\frac{20}{37}$. [5] 216 days. [6] $712.80. [7] 777. [8] 196. [9] A 22 days, B $26\frac{2}{5}$ days. [10] 18 feet. [11] $33\frac{3}{7}$ years. [12] $75.40.

EXERCISE III.

[1] A $1600, B $776, C $144. [2] $49.08. [3] $738. [4] ·0169. [5] $13\frac{1}{2}$ft. [6] £14 10s. $4\frac{1}{2}$d. [7] $87\frac{1}{2}$lbs. [8] $11\frac{4}{13}$ days. [9] 68 persons. [10] $8\frac{1}{2}$ft. [11.] $397.44. [12] 45 times.

EXERCISE IV.

[1] $\frac{1}{3}\frac{7}{6}\frac{2}{1}$. [2] £970 2s. 6d. [3] 60, 61, 62, 63. [4] £655. [5] 20 days. [6] £109 2s. 11d. [7] $21.60. [8] $11\frac{1}{2}$hrs. [9] 37 of each. [10] $821\frac{1}{3}$. [11] 81, 108, 126. [12] $73\frac{1}{2}$ days.

EXERCISE V.

[1] A $1000, B $720, C $600. [2] 955, 1337, 2101, 2483. [3] 56 feet. [4] 1084miles, 2fur., 12per., 2ft., 5in. [5] 1800 and 360. [6] $\frac{3}{7}\frac{5}{2}\frac{1}{6}\frac{1}{4}$. [7] $2409. [8] $9188\frac{7}{16}$ tons. [9] $34\frac{1}{5}$ days. [10] £12 8s. 9d. [11] $15.20. [12] £10 7s. 8d.

EXERCISE VI.

[1] 42acres, 2roods, 16per., 22sq. yds., 7sq. ft., 13sq. inches. [2] 11ft. [3] 37miles, 3fur., 28per., 4yds. [4] 8 days. [5] C 14 days, D 42 days. [6] $16\frac{1}{5}\frac{1}{2}\frac{2}{5}$. [7] A £9, B £3 4s. [8] 11 men. [9] $14\frac{1}{4}$ acres. [10] 4831020 seconds. [11] £186 6s. 3d. [12] 44 days.

EXERCISE VII.

[1] $1.40. [2] 2ft. 6in. [3] 45 days. [4] $19.94 [5] $76\frac{1}{2}$. [6] 24 days. [7] £87 15s. [8] 1254528sq. ft. [9] 17 barrels. [10] £18 11s. [11] A $1458, B $1350, C $990. [12] $18\frac{8}{8}\frac{1}{0}$.

EXERCISE VIII.

[1] 32128 rails. [2] $1800. [3] $5760. [4] 197. [5] $21.12. [6] $3\frac{3}{5}$ miles. [7] $\frac{1}{8\,6\,4\,0}$. [8] $9\frac{1}{2}$ feet. [9] $2625. [10] $6\frac{1}{1}\frac{0}{2}\frac{2}{5}$ tons. [11] $1.28. [12] 4261.

EYERCISE IX.

[1] 21 gallons. [2] 1st £21 13s. 4d., 2nd £17 6s. 8d, 3rd £34 13s. 4d., 4th £8 13s., 4d. [3] 111917. [4] $72.54\frac{2}{5}$. [5] ·074116. [6] $75.60. [7] 18 acres, £157 5s. 6d. [8] 9 days. [9] 672. [10] £2 17s. $10\frac{2}{3}$d. [11] ·3124$\frac{8}{}$. [12] $120.

EXERCISE X.

[1] A $570, B $660. [2] 9 rods. [3] 133. [4] 8 inches. [5] $4. [6] 87 cents. [7] $\frac{1}{0}\frac{2}{7}$ of a day. [8] $2\frac{1}{2}$ miles. [9] 24 yards. [10] $\frac{1}{4}\frac{3}{3}$. [11] $\frac{1}{0\,3}$. [12] $439.68.

EXERCISE XI.

[1] $382\frac{1}{2}$ grains. [2] $800. [3] 41. [4] $170\frac{8}{2}\frac{9}{2}\frac{9}{4}$ lbs. [5] 4 miles east of Chatham. [6] 28 feet. [7] $\frac{2}{1}\frac{3}{0}\frac{0}{7}\frac{7}{0}\frac{4}{3}\frac{7}{2}$. [8] $69. [9] ·3617. [10] 59 of each. [11] £84 4s. $4\frac{3}{5}$d. [12] 3s. 3d.

EXERCISE XII.

[1] 17701. [2] $2460. [3] 560 bushels. [4] $\frac{7}{8}$. [5] 132 hours. [6] 964 times. [7] $91.34\frac{1}{8}$. [8] $8\frac{1}{2}\frac{9}{0}$ cords. [9] Each boy $117, each girl $52. [10] $38\frac{1}{1}\frac{4}{5}$ rods. [11] $226\frac{5}{1\,6}$. [12] $780.

EXERCISE XIII.

[1] $817. [2] $\frac{2}{5}$ — [3] 1620 miles. [4] 1hr. 12min. [5] $17.92. [6] 315, 180, 140. [7] $\frac{6}{9}\frac{4}{5}$. 72 days. [8] Man $1.08, wife 81 cents, each child 54 cents. [9] 341.91\frac{3}{8}$. [10] A $400, B $220, C $255. [11] 7 inches. [12] $133.72\frac{1}{2}\frac{4}{7}$.

EXERCISE XIV.

[1] $\frac{1}{5}\frac{2}{4}\frac{2}{2}\frac{1}{5}\frac{1}{6}$. [2] $43.33\frac{7}{8}$. [3] $8\frac{3}{8}$lbs. [4] $3\frac{2}{7}$gals. [5] 1155pears. [6] $\frac{9}{16\frac{1}{2}}$, $\frac{11}{16\frac{1}{2}}$, $\frac{13}{16\frac{1}{2}}$. [7] $\frac{6}{2}\frac{2}{0}\frac{2}{3}$. [8] Barley 74 cents, oats 48 cents. [9] $\frac{3}{1\,0}$ of cost price, $\frac{3}{1\,8}$ of selling price. [10] $24. [11] 357. [12] £161 6s. 8d.

EXERCISE XV.

[1] \$352, \$480, \$1120. [2] \$1.48 per yd. [3] **\$44640. 775** oxen, 1080 cows, 4340 sheep, 5022 hogs. [4] \$35.43¾. [5] $\frac{5}{32}$. [6] 92974·89692. [7] $2795\frac{1}{10}$ tons. [8] \$38400. [9] 23 of each. [10] 973. [11] $14\frac{2}{5}$ acres. [12] 120 hours.

EXERCISE XVI.

[1] 1 man \$48, woman \$32, child \$16. [2] $64\frac{6}{7}$ hours. [3] 1050 revolutions. [4] $\frac{1}{6}\frac{6}{3}\frac{1}{7}\frac{2}{4}\frac{3}{5}$. [5] \$396.90. [6] \$600. [7] $12\frac{3}{16}$ tons. [8] A 8 days, B 12 days, C 16 days, D 24 days. [9] $\frac{3}{25}$. [10] \$7455. [11] $129\frac{1}{3}$ yards. [12] $1047\frac{1}{12}\frac{0}{6}\frac{3}{0}$.

EXERCISE XVII.

[1] \$50. [2] $\frac{1}{5}\frac{3}{6}$. [3] 1st £4 4s., 2nd £3 7s. 6d., 3rd £3 3s., 4th £1 13s. [4] \$32.72½. [5] \$1440. [6] 5½ cents. [7] \$115.20. [8] $14\frac{2}{17}$ years. [9] \$4800. [10] $2\frac{1}{2}\frac{1}{8}$hrs. [11] 1rood, 14per, 23sq. yds., 6sq. ft., 5sq. in. [12] £4 2s. 3d.

EXERCISE XVIII.

[1] 13 men. [2] \$170.87$\frac{7}{8}$. [3] £2114 5s. 8$\frac{4}{7}$d. [4] $88\frac{2}{4}\frac{8}{5}$ cents. [5] 8 minutes. [6] 27 days. [7] 29 cords. [8] $3\frac{1}{2}\frac{7}{7}$ miles. [9] $48\frac{3}{4}$ days. [10] $2\frac{6}{11}$ft, 1650 revolutions. [11] $\frac{7}{12}$, $\frac{3}{8}$. [12] $29\frac{1}{6}$ per cent.

EXERCISE XIX.

[1] $13\frac{2}{5}\frac{5}{4}\frac{5}{3}$ times. [2] $\frac{2}{1}\frac{5}{0}\frac{2}{6}$. [3] $\frac{1}{5}\frac{6}{0}\frac{9}{4}$. [4] Horse **\$124.40,** carriage \$96.75, harness \$32.24. [5] A \$1050, B \$970, C \$1160, D \$600. [6] 47, 48, 49, 50. [7] 64800 tons. [8] $21\frac{7}{12}$, $20\frac{1}{6}\frac{5}{4}$, $17\frac{1}{7}\frac{7}{2}$. [9] 36 times. [10] 63168sq. yds. [11] $50\frac{3}{4}$ days. [12] $57\frac{2}{5}$ rods.

EXERCISE XX.

[1] 13lbs of tea, 52lbs. of coffee. [2] 7 days. [3] 3744lbs. [4] 70 days. [5] 35 fields, 39204 square yards. [6] \$812.50. [7] \$554.40. [8] \$59.40. [9] 11 weeks. [10] $425\frac{1}{3}\frac{2}{6}\frac{5}{9}\frac{5}{7}$ bushels. [11] $\frac{2}{3}\frac{1}{7}\frac{2}{2}\frac{3}{7}$. [12] 45 men.

EXERCISE XXI.

[1] \$37.28$\frac{5}{17}$. [2] \$960. [3] 1192tons, 14cwt., 12lbs., 5oz. [4] 2·2285. [5] 480 acres. [6] Watch £23 3s. 11d., chain £4 17s. 8d. [7] 22 yards. [8] A \$1.33⅓, B \$2.46. [9] **\$1328.04.** [10] 128. [11] $11\frac{1}{9}$ per cent. [12] 3lbs., 9oz., $9\frac{3}{5}$drs.

EXERCISE XXII.

[1] $12\frac{3}{5}$hrs.]2] $9\frac{1}{7}$. [3] £1684 16s. $11\frac{21}{40}$d. [4] $\frac{17}{56}$. [5] $8453.25. [6] 2520. [7] A £2 9s. 6d., B £4 8s. 6d. [8] $\frac{25}{33}\frac{3}{9}$. [9] £151 6s. $4\frac{4}{5}$d. [10] $111429\frac{3}{5}$ minutes. [11] $37\frac{3}{9}$ minutes. [12] $\frac{6}{7}\frac{4}{3}\frac{8}{9}$.

EXERCISE XXIII.

[1] 120 sheep. [2] 104 days. [3] $27\frac{9}{13}$ days. [4] $9\frac{3}{5}$ acres. [5] $1415.70. [6] 5 years. [7] $1\frac{7}{8}$ feet. [8] $\$31.22\frac{1}{10}\frac{1}{8}$, [9] 16 days. [10] $14\frac{7}{13}\frac{9}{6}$. [11] 13 horses. [12] A $480, B $440.

EXERCISE XXIV.

[1] 288 pounds. [2] 6 days. [3] 8 horses, 24 oxen, 48 cows. [4] $9\frac{3}{5}$ minutes. [5] $11\frac{3}{8}$hrs. [6] $73\frac{1}{2}$ft. [7] $4000. [8] $\frac{\frac{3}{4}}{1\frac{1}{11}}$. [9] $5\frac{7}{9}$. [10] $1\frac{3}{6}\frac{6}{6}$. [11] $2 loss. [12] 1350.

EXERCISE XXV.

[1] 18ft. [2] $\frac{155\frac{1}{4}}{121\frac{1}{2}}$. [3] $4900. [4] $92\frac{2}{5}$. [5] 420. [6] $\frac{4}{5}$. [7] 90 waggons. [8] £208 13s. 4d. [9] 430miles, 6fur., 18per., 5yds., 1ft., 6in. [10] $1\frac{1}{4}\frac{3}{2}$. [11] 83·416. [12] £68 5s. $11\frac{3}{4}$d.

EXERCISE XXVI.

[1] £31 12s. 8d. [2] 13414 steps. [3] $2.16 and 96 cents. [4] 2, 3, 5, 7, 13, 17, 23, 31. [5] 31 bushels. [6] $\frac{1}{4}\frac{3}{6}$ of a £. [7] 9 horses, 27 cows, 108 sheep. [8] 1ton, 16cwt., 2qrs., 14lbs. [9] 6hrs., $17\frac{1}{7}$min. [10] $16\frac{2}{3}$ days. [11] 2ft., 8in. [12] $24\frac{2}{3}\frac{4}{5}$.

EXERCISE XXVII.

[1] $54\frac{1}{2}$ cents. [2] $10\frac{1}{2}$ feet. [3] $567 loss. [4] 59. [5] $\$63.47\frac{3}{5}$. [6] $\$68.26\frac{2}{3}$. [7] 34miles, 1fur., 19per., 2yds., 6in. [8] $503\frac{1}{3}$lbs. [9] 6hrs., 30min. [10] $1120. [11] Length 28 feet, breadth 20 feet. [12] 9 inches.

EXERCISE XXVIII.

[1] 288 miles. [2] 8. [3] A £300, B £120, C £420. [4] 33088 times. [5] A 36 days, B 48 days, C $28\frac{4}{5}$ days. [6] $16281. [7] 4 days. [8] $85.20, $168.36. [9] 40, 140, 180. [10] $470.40. [11] $11\frac{4}{15}$. [12] $\frac{1}{2}\frac{6}{1}\frac{4}{3}$.

EXERCISE XXIX.

(1) $\frac{2}{3}\frac{7}{2}$. (2) 20lbs. $9\frac{4}{10}\frac{3}{8}$oz. (3) 34 yards. (4) $15\frac{3}{11}$ lbs. (5) $1280. (6) $18\frac{2}{3}$ miles. (7) $4.48. (8) 75 cents. (9) 126 and 120. (10) $\frac{1}{3}\frac{6}{3}$. (11) 1224. (12) $19\frac{7}{12}$ bushels.

EXERCISE XXX.

(1) $286.17\frac{3}{5}$. (2) $80.64. (3) $345.60. (4) 26lbs. (5) 18 of each. (6) 32 sheep. (7) $\frac{1}{10}$ of an inch. (8) 8 feet, 4 inches. (9) 27 and 33. (10) 10 feet, 8 inches. (11) A $250, B $150, C $120, D $102. (12) $110.96\frac{2}{3}$.

EXERCISE XXXI.

(1) $57\frac{3}{5}$ days. (2) $84\frac{2}{7}$ cents. (3) $61\frac{8}{9}\frac{9}{0}$ tons. (4) $35.55. (5) $123\frac{1}{6}\frac{7}{2}\frac{1}{3}$ grains. (6) 11 feet, 8 inches. (7) A $1000, B $1200. C $1800, D $2400. (8) 35 yards. (9) A $8400, B $7800, C $4600. (10) 15552 bricks. (11) $18\frac{3}{4}$ per cent. (12) $1\frac{1}{8}\frac{1}{0}$.

EXERCISE XXXII.

(1) 3338937. (2) A $\frac{1}{4}$ of a day, B 8 days, C $\frac{3}{8}$ of a day. (3) 360 acres. (4) 220 yards. (5) 38 minutes (6) 8 inches. (7) $3\frac{3}{4}$ pence. (8) 1st year $1470, 2nd year $1638. (9) A 51 days, B 34 days. (10) A $900, B $840, C $720, D $630. (11) £101 8s. 8d. (12) ·0012.

EXERCISE XXXIII.

[1] $6\frac{3}{4}$ hours. [2] $\cdot\overline{08145142857}$. [3] 10yds., 2ft., 9in. [4] £16 12s. 8d. [5] $44.93\frac{3}{4}$. [6] $99.47. [7] 7 per cent. [8] $7800. [9] 4 feet. [10] $504 loss. [11] A $1240, B $744, C $1116, D $775. [12] Tom 55, John 66, Robert 78.

EXERCISE XXXIV.

[1] 234, 390, 858, 1326, 1482. [2] 4 days. [3] Man $11.25, woman $9, boy $6.66\frac{2}{3}$. [4] $5400. [5] 195 and 91. [6] $115\frac{5}{8}\frac{5}{9}$ [7] $24. [8] $35\frac{1}{16}$ gallons. [9] 128 bushels. [10] $10\frac{2}{3}$ hrs. [11] 30 days. [12] 120 sheep.

EXERCISE XXXV.

[1] $\frac{4}{13}$. [2] John $360, Robert $540. [3] 1st $35, 2nd $42. [4] 760 apples. [5] 3 months. [6] 21 bushels. [7] At the end of the 10th day. [8] 119 pounds. [9] Wheat 97 cents, oats 45 cents. [10] $9\frac{1}{11}$ per cent. [11] 120 rods. [12] $108.

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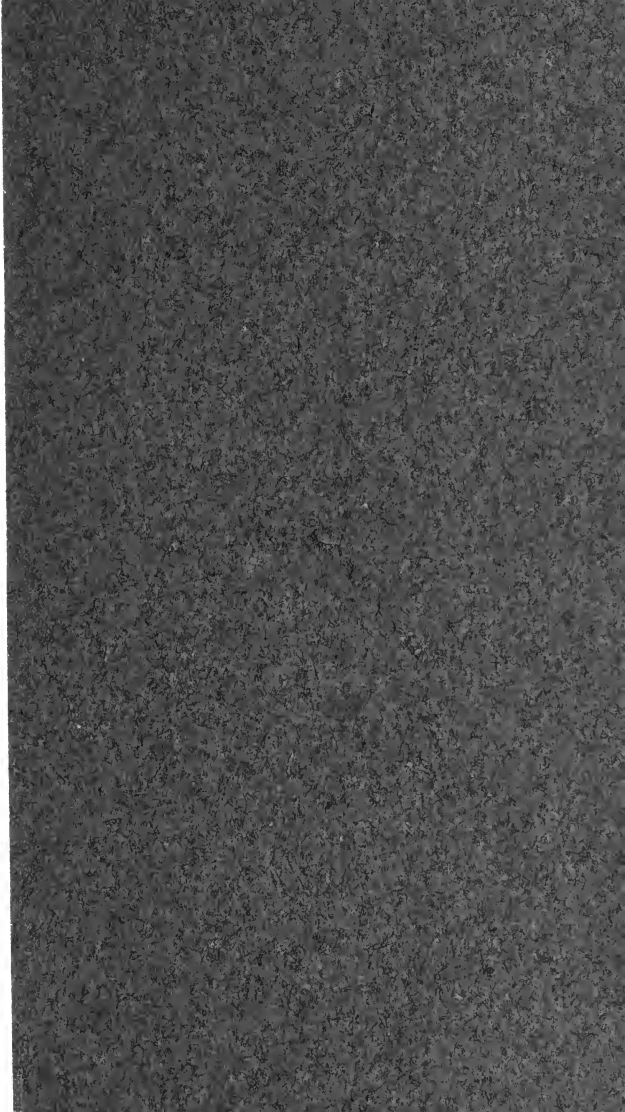
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